FLIGHT

MAGAZINE

APRIL 1961

50 cents

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OWNERS OF BEECH, CESSNA, AND PIPER AIRCRAFT

NOW YOU CAN GET BETTER PERFORMANCE AND EXTRA ENGINE PROTECTION WITH A NEW FRAM OIL FILTER!

For reliable, dependable engine performance, Fram Oil Filters are FAA Approved for most light aircraft and available as optional equipment on most models of Beech, Cessna and Piper Aircraft. Filters are also available for previous models of these and other light aircraft.

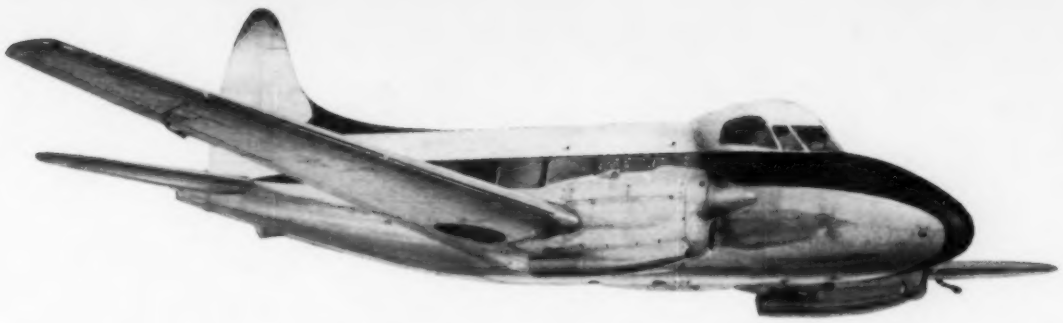
For about $50 per engine, a Fram Filter can be completely installed in your plane. Along with greater engine protection and better performance, a Fram Oil Filter means real economy. Here's what one Airplane Service Agency reports on a Fram Oil Filter installation:

"Our engine overhaul department estimates that the reduction in costs of parts replacement on this engine is approximately $140.00...the saving in cost for oil through 800 hours amounts to $88.40. A total saving of $228.40 attributable directly to the Fram Oil Filter. We are strongly recommending installation of FRAM PB55-1 Oil Filters to all of our customers."

Contact your local Airplane Service Agency for installation or write Fram Corporation, Providence 16, R. I.

YOUR FIRST LINE OF ENGINE PROTECTION

FRAM FILTERS



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A new elegance in executive aircraft

Now fitted with thrust-augmented Gipsy Queen 70 Mark 3 **400 h.p.** supercharged fuel-injection engines.

Superb custom interior styled and executed to your requirements by internationally famous **HORTON-HORTON** of Fort Worth, Texas.

Luxurious six-seat cabin, plus completely separate toilet with hot running water and many other fine custom appointments.

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This special issue is presented by FLIGHT Magazine each year for the advancement of LOCAL AIR SERVICE and the communities it serves . . . with emphasis on usefulness to the public, the airline industry, Congress and government agencies.

The 12th ANNUAL LOCAL SERVICE AIRLINE Edition this year will show trends in modernization of facilities and equipment. Route expansions will be charted in multi-color map form. Rising costs of operations will be tabulated into factual tables for easy reference. This special presentation provides the Local Service Airline Industry's most useful yardstick of progress.

This documentary edition of FLIGHT Magazine offers manufacturers and distributors of aviation products an exceptional opportunity for 100% penetration of the world-wide air transport industry. As this edition will be used in aviation circles as a permanent reference book it is the one medium for effective advertising sales promotional results.

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FLIGHT MAGAZINE

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NEWEST TURBO-SUPERCHARGER-EQUIPPED HELICOPTER is this 3-place Bell 47G-3B to be marketed in May with Lycoming TVO-435 engine equipped with AiResearch T-11 exhaust-driven supercharger for 260-hp. take-off rating and 220-hp. continuous operation rating. Sea level performance above 15,000 ft. is claimed for the new Bell, which has 1,137-lb. useful load at 2,850-lb. gross weight. Turbo blower has new automatic manifold pressure control system. Service ceiling is 20,400 ft., with 18,000-ft. hovering in ground effect and 15,600-ft. hovering out of ground effect. Two views show Lycoming engine and supercharger installation.

AIR Report
Significant Trends and News

NEW 1961 BEECH TRAVEL AIR LIGHT TWIN is priced $2,000 lower than last year's model and features fuel-injected 180-hp. Lycoming IO-360-B1A engines. The $49,500, 200-mph., 4-5-pl. B95-A Travel Air also has a 1,645-lb. useful load, up 180 lbs. at 4,200-lb. gross weight.

ORDERS FOR NEW PIPER COLTS have far exceeded the factory's expectations and production has been almost tripled from 425 originally scheduled to 1,100 units by September. Current backlog of orders is close to 500 units, with production running 8 airplanes daily, said Sales Manager J. W. Miller. The 2-place, 108-hp. Colt sells for $4,995, with a financing plan permitting $995 down payment and payments of $29.68 per week.

SECOND ANNUAL MID-AMERICA AIR FAIR at Wichita, May 13-14, will be this year's largest general aviation air exposition with manufacturers displaying 1961 models of aircraft and equipment, special flight demonstrations including agricultural aircraft, helicopters and special design aircraft, aircraft judging, tours of major Wichita aviation facilities, aircraft owners and operators clinic and other events. Everybody is invited. Site of the show and displays is the Wichita Municipal Airport.

FLIGHT MAGAZINE

APRIL, 1961 VOL. 50, No. 4

THIS MONTH'S COVER pictures the new 1961 Beechcraft N35 Bonanza in flight with Chicago's skyline in the background. The N35 cruises 195 mph. using 75% of power, 190 mph. on 65% hp., and 159 mph. on 45% hp. It is powered by a 260-hp. fuel-injected Continental engine and has 1,270-lb. useful load at 3,125-lb. gross weight.

—(Beech Photo by Jim Yarnell.)

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FLIGHT MAGAZINE, April, 1961, Vol. 50, No. 4. Published Monthly. Publication Office, P. O. Box 750 (2700 N. Haskell Ave.), Dallas, Texas. Price 50 cents single copy. Subscription rates: United States, one year, $3.00; two years, $5.00; three years, $6.00. Established February, 1934. Entered as second-class matter at the Post Office, Dallas, under the act of March 3, 1879.

Copyright, 1961, by Air Review Publishing Corporation.

HARRY C. ARCHER (left, above) has been promoted to be aviation sales manager of Champion Spark Plug Co., with James F. Conner (right) promoted to be assistant aviation sales manager. Archer joined Champion in 1953 and Conner has been with the firm 5 years.

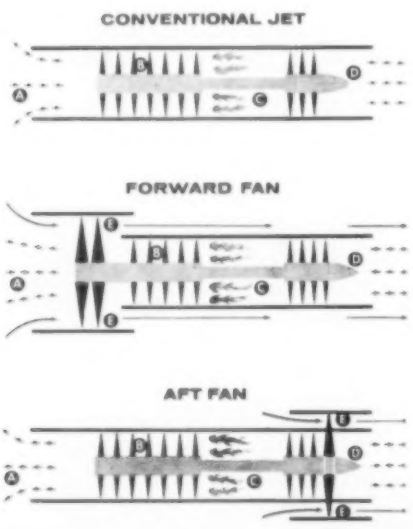
BIGGEST PLANS YET FOR UMBAUGH GYROPLANES were proclaimed April 1 by Ramond E. Umbaugh, who said he had contracted for 30,000 Parsons rotor blades costing $10 million, and had given "a go-ahead" for production of 180-hp. Lycoming engines and Goodyear landing gears.

NEW-PRODUCTION NAVION RANGEMASTER by Navion Aircraft Division of Tusco Corp., Galveston, Texas, has lengthened cabin with 5 individual seats, left-side cabin door instead of sliding canopy, fuel-injected 260-hp. Continental engine, 108-gal. standard fuel capacity, including wingtip tanks and range of 1,475 mph. in 8 hrs. 10 mins. at 181 mph. using 65% of power with 1,858-mile range in 10 hrs. 30 mins. at 177 mph. using 50% of power. Maximum cruise speed using 75% of power is 195 mph. Complete with radio, it will be priced at $25,000 and will offer 1,200-lb. useful load at 3,150-lb. gross weight.

AMERICAN NAVION SOCIETY, says its president and general manager, S. Dan Brodie, P. O. Box 516, San Leandro, California, was formed last October by California Navion owners and now has membership representing about 20% of all Navions flying, with 43 states represented. "Members feel the Navion is perhaps one of the most controversial, cussed and discussed, loved and hated light aircraft ever built," says Brodie. Navioneers, as members are called, will hold their first annual fly-in May 19-21 in Las Vegas.

FREE BEECHCRAFT INSPECTION will be available to owners of seven Beech models during course of Beech factory's 13th annual service clinic at 40 Beech distributor-dealer stations throughout the nation during April-September.

CESSNA DEALER MANAGEMENT CONFERENCES are scheduled for April 21-22 at Oakland and May 5-6 at Wichita, with outstanding authorities discussing management



SUPER PERFORMANCE is provided by 17,000-lb.-thrust front-fan engines, new wing leading-edge flaps and new inboard wing "glove" on Boeing 707's operated by American Airlines. Named "Astrojets" by AA, the conversions have 25% more power, 40-mph. additional cruise speed at Mach .9, 1,000-1,750-ft. shorter take-off, 20% less landing distance, 20-25% less fuel consumption. On press flight, first Astrojet accelerated to 113 knots in 13 secs. at 192,000-lb. gross, climbed to 31,000 ft. in 10 mins., cruised at Mach .9. It will hold 10,000 ft. with 3 engines out. Sketches at left show straight jet's intake air (A), compressed air (B), combustion gases (C) and exhaust (D) are augmented by forward and rear fans which obtain thrust from air by-passed around engine exterior. By-passed air (E) also reduces exhaust noise but front fan creates new, high-pitched whine for which "hush kits" will be added.

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Hayward—Western Aircraft & Engine Co.
Long Beach—Corporate Aircraft Assoc.
Santa Paula—Bassett Flying Service
Santee—Santee Air, Inc.
COLORADO
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Darien—Conn Mooney Sales
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Sioux City—Airways Service, Inc.
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MARYLAND
Easton—Universal Aviation
MASSACHUSETTS
Marshfield—Marshfield Airways, Inc.
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Detroit—Skylark Flying Service, Inc.
MINNESOTA
Fertile—Walters Aviation
Hopkins—Executive Aero, Inc.
Minneapolis—Ford Aviation, Inc.
Willmar—Willmar Air Service, Inc.
NEVADA
Las Vegas—Nevada Aircraft, Inc.
NEW JERSEY
Teterboro—Watson Aviation, Inc.
NORTH CAROLINA
Charlotte—Smith Regal Flying Service
Rocky Mount—Harmon Mooney Sales
NORTH DAKOTA
Hettinger—Hettinger Air Service
Minot—Pietsch Flying Service
Rugby—Crawford Aircraft Sales
OHIO
Canton—Al Holmes Aircraft Radio Ser.
Columbus—Air Ohio, Inc.
Dayton—Car Imports of Dayton
Galloway—Columbus Airpark, Inc.
OKLAHOMA
Enid—Shuman Flying Service
Sayre—Gerald Bibb
Tulsa—Aircraft Management Co.
OREGON
Albany—Cascade Aviation
Brookings—Western Aero, Inc.
Grants Pass—H. F. Shaw
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Lancaster—Garden Spot Airpark, Inc.
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SOUTH CAROLINA
Greenville—American Aviation Service
TEXAS
Brownsville—Sam Hughston
Corpus Christi—International Aviation
Dallas—Mustang Aviation, Inc.
Electra—Parks Mooney Sales
El Paso—El Paso Mooney Sales
Friendswood—Winsett Aviation
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ficiency with management personnel of Cessna dealers.

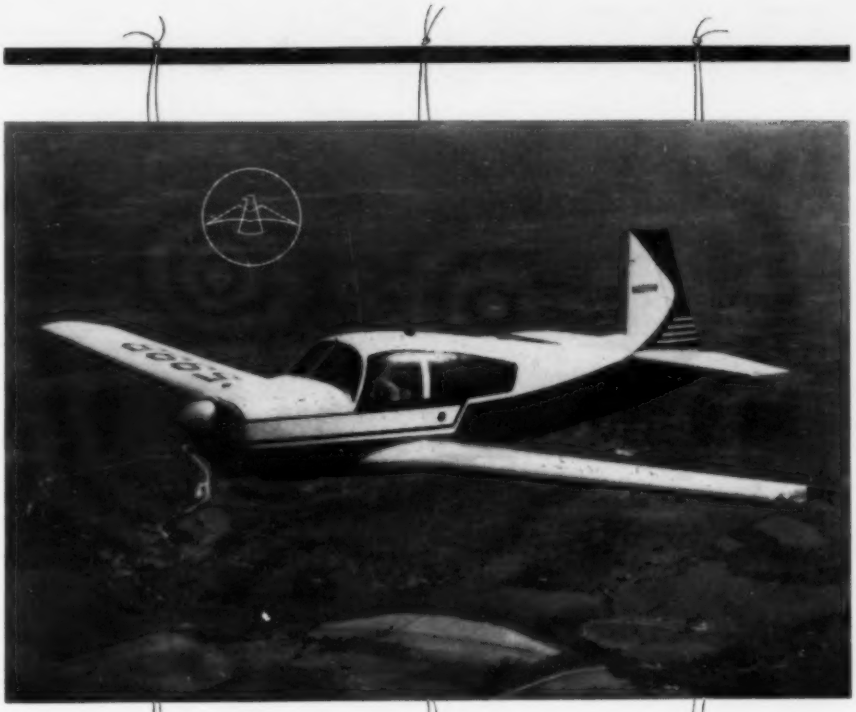
TRICYCLE LANDING GEAR will feature new version of the 2-place Meyers 145 being readied for production by Meyers Aircraft, Tecumseh, Michigan.

TRIPLED PRODUCTION OF 2-PLACE BRANTLY HELICOPTERS has been announced by M. L. (Al) Alson, sales vice president of Brantly Helicopter Corp., Elkhart, Indiana. He said the firm's factory at Frederick, Oklahoma, is now stepping up production to 4 helicopters per week.

DOYN AIRCRAFT CONVERSION OF CESSNA 172 with 180-hp. Lycoming engine and constant-speed prop is said to offer 155 mph. at 75% of power at 6,500 ft., 400-ft. take-off run, 1,100-fpm. rate of climb and 19,000-ft. service ceiling. Price of 180-hp. Doyn converted 172 is $13,490 and kits are available from Doyn Aircraft, 6625 East Kellogg, Wichita.

JOHN M. ERSKINE, formerly with Atlantic Aviation at Boston, is now vice president-general manager of Currey Sanders Aircraft Co., Beechcraft distributor at Shreveport. Robert W. Jeter is vice president-sales manager. . . . **ALLAN B. HEINSOHN** has been named vice president of Linden Flight Service, Beech sales and service center at Linden, N. J. . . . **JAMES P. (JIM) CONRAD** has been appointed Eastern regional sales manager of King Radio Corp., with offices at 23,760 Wonneta Parkway, West Lake, Ohio (Cleveland).

"THE POSSE HAS FOUND THEIR MAN" and he's Keith Kahle, Central Airlines president, shown being welcomed to Wichita, Kansas, last month with his pre-inaugural flight linking Kansas City, Garden City, Dodge, Great Bend, Wichita, and other cities. Pretty girls are part of Wichita's famed "Pink Poodle Posse," a civic enterprise using school models.



initial cost $15,995.

hourly operating cost $10.71

time costs $$$

when buying an airplane consider all the costs

Total cost of flying a Mooney Mark 21 in five years can save you up to $13,350.00 over the total cost of flying a Cessna 210. The Mark 21 will save you as much as $17,885.00 over a 250 Comanche . . . will save you up to $16,930.00 over a Debonair.

These are three examples of how MOONEY can save you as much as its original purchase price in five years of operation (comparisons are based on 300 hours per year and use manufacturers published figures.)

Initial Cost, Operating Cost, and Time Cost must be considered as a "Total Cost" in determining comparative cost of air transportation.

Compare "Total Costs" with any single engine business plane flying . . . dollar for dollar — feature for feature the all new, all metal Mooney Mark 21 adds up to the best investment in modern transportation.

anyway you figure it... Mooney is the buy!

MOONEY COMPARISON FILE

You're invited to make your own comparison check. Profit from your flying, write for the MOONEY COMPARISON FILE or see your Mooney dealer today.

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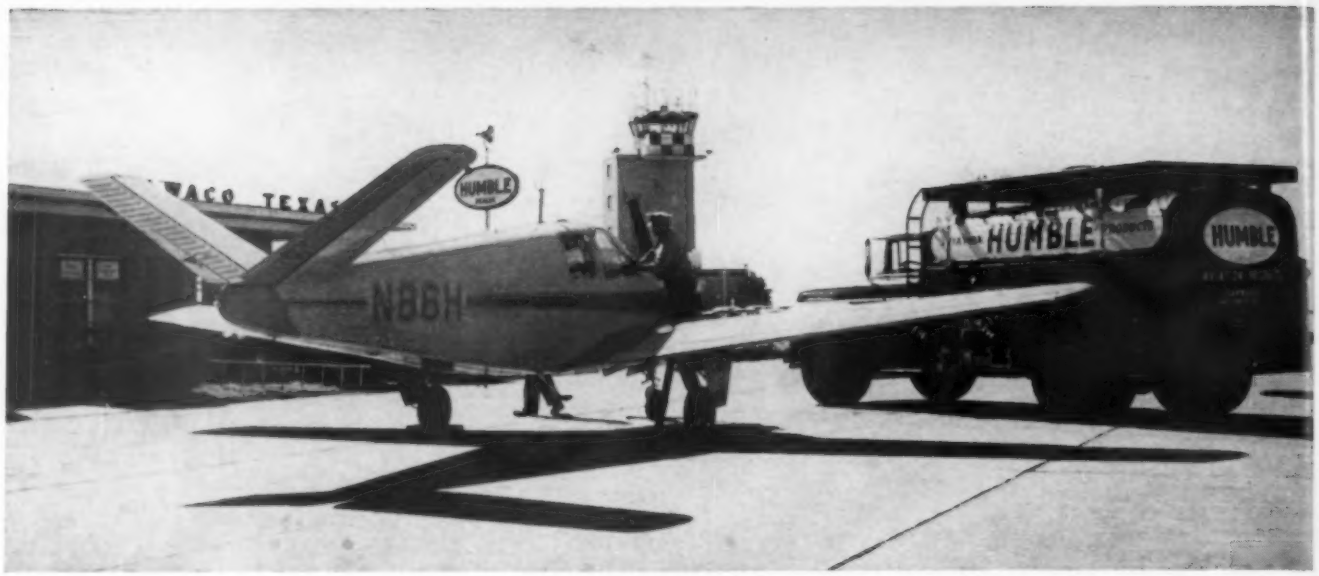
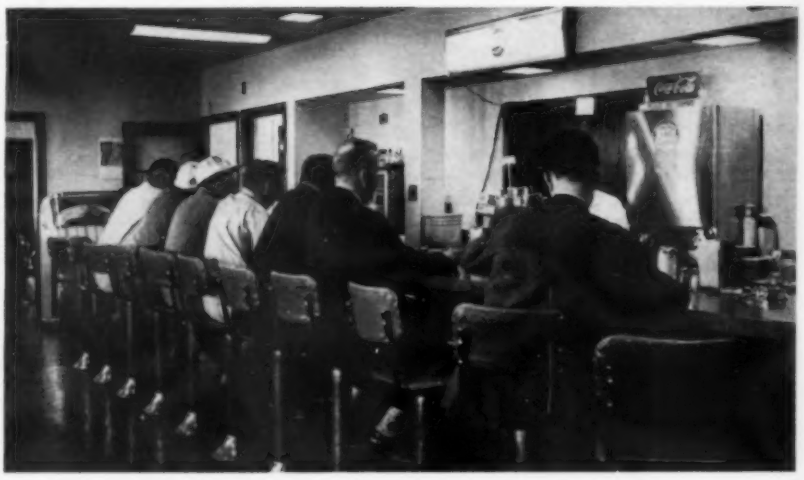


Waco Airport: *convenient* service...



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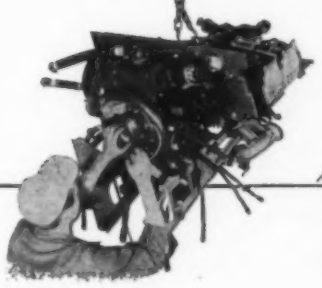

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100-channel, 108.0 to 117.9 mc., crystal-controlled Nav Receiver with self-contained power supply and 5-watt Speaker Amplifier—and airline standard VOR-LOC/Converter-Indicator—combined weight under 6½ lbs.!

Panel-mounted, compact and lightweight, the King KR-40/KI-200 Navigation System brings you truly professional performance, to replace or augment your present equipment! Test-fly this system! Compare its size, weight, performance and cost with any other NAV system made.

The KR-40 NAV Receiver has simple, accurate, front-panel crystal-tuning covering all Omni and Localizer channels—108.0 to 117.9 mc. It includes a self-contained power-supply (14 or 28 V) and 5-watt speaker amplifier.

The KI-200 Omni-Localizer/Converter-Indicator operates from the KR-40, with airline accuracy of 2 degrees; it has professional type presentation, easy to interpret, and switches automatically between Omni and Localizer modes.

KR-40 NAV Receiver (14V), only **$495**

KI-200 VOR-LOC/Converter-Indicator, only **$645**

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SALUTE!

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Left: Mechanic Bob Welch, Foreman Jack McCreery, VP R. D. Moore.

Right: Kardex Clerk Gayle Stone and Lead Man Sam Pumilia.

SALUTE! "Designed by pilots – Engineered and manufactured by Allied." This is more than a slogan. Here's a reality, through which Allied Instrument Laboratories of Houston has gained justifiable renown by producing equipment custom-tailored to the specific needs and tastes of flying customers in every corner of the land. This scientifically-equipped firm operates a leading shop and sells and services all types of accessories, instruments, and radios under the experienced guidance of President L. A. Hamilton and VP R. D. Moore. Southwest Airmotive - Houston is Allied's source for the products of Aeroquip, several Bendix Divisions (Red Bank, Utica, Pacific, Pioneer-Central, Scintilla), Delco-Remy, Eveready, Exide, Jack & Heintz, Prestone, and others.

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Business aviation leader in Flyin' Lincoln Land

SALUTE! Making its mark indelibly in the flying history of "Lincoln Land" is dynamic Capitol Aviation, Inc., where 65 skilled persons utilize a large, modern facility in the quality maintenance of business aircraft – up through the Learstar in size. Capitol is FAA-rated for servicing airframes, engines, props, accessories, radios, radar, and autopilots, and presently is converting C-45H aircraft into fine business transports. A subsidiary of Sangamo Electric Co., Capitol is led by Roy Poyner, general manager; George Zimmerman, office; Ralph Good, service; Chick Abbott, radio, and Ron Russell, parts. They rely on Southwest Airmotive's St. Louis division for AN hardware and for AC, Aeroduct, Aeroquip, Co-Op, Delco-Remy, Exide, Glidden, Goodrich, Firestone, Grimes, Hamilton Standard, Marquette, 3-M, Miracle Power, Pratt & Whitney, Eveready, Winslow, and Wood Electric.

TULSAIR DISTRIBUTORS, INC., Municipal Airport, Tulsa, Okla.

L.-R.: VP-Service Norman K. C. Brown, Parts Mgr. Otis Perry, VP-Sales John Brownlee, and Owner Gail Clark

SALUTE! In but 15 years, Owner-President Gail Clark – wartime Army flight instructor – has progressed from a small downtown office to a 66,000 sq. ft. sales and service base, one of business aviation's real show places! The glassed-in hangar display room is in keeping with Tulsair's fame as a top Beech Aircraft distributor. Fifty-six employees – including 80% of Clark's original crew – specialize in the overhaul of airframes, engines, accessories, and electronics. This versatile team also offers a flight school, airplane charter, and complete line service. Clark's "top hands" include John Brownlee, VP-sales; Norman K. C. Brown, VP-service, and Otis Perry, parts manager. Southwest Airmotive supplies Tulsair with items from the Scintilla, Red Bank and Utica divisions of Bendix, and from AC, Delco-Remy, Eveready, Pratt & Whitney, and Prestone.

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EDITORIALS

Mitchel Field—An Industry Problem

EVERYBODY in aviation has a definite stake in the preservation of Mitchel Field on Long Island as a going concern airport. Last November the U. S. Air Force announced that it was abandoning the 1,100-acre strategically located airport.

Perhaps no metropolitan area in the country needs an additional large and permanent commercial airport facility more than the New York City area. The tremendous growth of business aviation predicted for the next decade alone justifies all the efforts now being put forth to save the airport as a commercial facility.

The going will be tough. Local politicians on Long Island are already at work proposing schemes for plowing up the field and putting it to any number of non-aviation uses.

Usually in these cases of one military branch abandoning such a facility, the other services or Federal agencies are offered the property. Just recently the Army took over some of the facilities of the Naval Air Station at Corpus Christi, Texas. Observers close to the Mitchel Field situation, however, seem to believe that there are two ways to go — organize a national aviation drive to preserve the field as an airport, perhaps as a part of the New York Port Authority complex, or permit the local Long Islanders to chop it up into industrial sites, housing developments, parks or recreational areas.

While the importance of preserving Mitchel as a going concern airport can not be over-emphasized, one must not lose sight of the tremendous national defense implications of keeping the runways open in case of war. For this reason the U. S. Air Force, the Army, Navy and the FAA should join hands and give powerful support to the move on foot to save Mitchel as an airport.

But the main burden of saving Mitchel rests squarely on the shoulders of commercial aviation interests who stand to gain the most from the establishment of an adequate commercial airport on Long Island.

Both individuals and companies are beginning to make contributions to the newly formed Long Island Planners For Mitchel, Inc., a non-profit organization now examining all the possibilities and spear-heading the drive to save Mitchel as an airport. Their address is Box 396, Garden City, Long Island. All of commercial aviation enterprise in the United States, whether cash contributors or not, should at least give moral and political support to these efforts. It is a national and not merely a local responsibility.

We Accept, Mr. Halaby!

WE'RE giving considerable attention in this issue (see page 28) to recent pronouncements from the top echelon of the Federal Aviation Agency, including a letter to all airmen over the signature of the new FAA Administrator, Najeeb Halaby, which indicate that the FAA not only recognizes the size and importance of general aviation but intends to create a healthier attitude toward civil aviation generally.

The most significant elements in this friendly gesture involve an ap-

THIRTY-THREE YEARS OLD AND STILL OPERATING is the record of this 1928 Ford Tri-Motor, overhauled recently by Pacific Airmotive at Burbank for a Mexican airline, TATSA. Powered by 450-hp. Pratt & Whitneys in BT-13 cowlings, it flies regular schedules between Mazatlan and Tayotitla, logging 4,000 hrs. every 12 years. TATSA Operations Manager Bert Brown says no other airplane can replace the 16-passenger, 13,700-lb. Tin Goose on that run.

—(PAC Photo.)

R. W. F. (BOB) SCHMIDT, Tucson Airport Authority executive director, has received Frontier Airlines' "Outstanding Citizen Award" for his contributions to civil aviation and national leadership as an airport authority. He is shown at left below with J. Dan Brock, Frontier vice president.

—(Frontier Airlines Photo.)

You'll need all this sooner or later. Here's the way to get it sooner: Take advantage of Cessna's low price for the completely equipped 1961 Cessna Skylane

See column on next page—and then your Cessna dealer. At the airport, look for the Cessna pennants, sign of extra Cessna service at over 375 dealers around the world. Here: Dixie Air Associates, Memphis, Tennessee.

MEN WHO KNOW AIRPLANES FLY CESSNA

Fully equipped for long-range "any time" flying

TO FLY 1ST CLASS IN '61—without leaving the middle price range: fly the fast new Skylane. *Standard equipment* includes communication and navigational radio gear . . . gyros and vacuum system . . . a full complement of instruments . . . and a new "eyes-on-the-road" instrument panel. That's only a beginning; you also get over-all 3-color paint . . . wheel-speed fairings . . . landing and navigation lights . . . and many more important extra features for one low price: $17,950.

A BIG 4-PLACE CABIN assures your comfort with fine fabrics, adjustable "Polycloud" seats, exceptional quiet-conditioning and a wealth of other luxury features.

THE NEW CESSNA 182—another outstanding value—is powered with a 230-h.p. Continental engine. You get speeds up to 167 m.p.h. . . . range up to 835 miles . . . and a 19,800-ft. service ceiling. Equipped with Cessna's famous Land-O-Matic landing gear, Para-Lift flaps, and High-Gliding wing to make your flying much easier. Price: $15,490.

FOR A DEMONSTRATION FLIGHT, call your Cessna dealer now. (See Yellow Pages.) Look at all 12 models . . . starting at $7,495. Also ask about his auto-type finance and lease plans. Or for further information, write:

Cessna Aircraft Co., Dept. FM-7, Wichita, Kansas. *All prices with std. equip., f.a.f. Wichita*

CESSNA

12 BUSINESS AIRCRAFT

parently sincere invitation from the FAA to all airmen everywhere to join in "a cooperative effort of sharing ideas" and to assist in finding new methods of serving the common cause. New ideas, not just gripes, are sought.

It probably will take some time for this new attitude to penetrate down into the working level of the Federal Aviation Agency, particularly in those areas where airmen and aviation establishments run afoul of the civil air regulations. While we have steadfastly defended the FAA and its legally-constituted authority in enforcement proceedings against willful and dangerous violators of regulations, there have been far too many cases on record of unnecessary persecution and nit-picking harrassment of airmen and commercial flight establishments by a small but powerful element of police-type agents and government lawyers.

While a lot of opportunists in the aviation business like to quote big numbers of pilots and plane owners, actually general aviation by most U. S. business standards is "small potatoes." We do need a more healthy climate in order to encourage more people to learn to fly, buy airplanes and keep them. Administrator Halaby's letter to all airmen certainly presages a new and wholesome attitude topside in the FAA. Let's consider the ground work ably laid for better relationships in the years just ahead and accept the Administrator's invitation to find new methods of "serving our common cause."

A Dangerous Bill

EVERY now and then a state legislature attempts to regulate air transportation operating on an intra-state basis. The latest proposed legislation along this line is Assembly Bill No. 152 in California, which would place common air carriers under the State Public Utilities Commission, regulate all air transportation, fix rates, establish rules, set up certificates of public convenience and necessity and, in effect, establish a state counterpart of the CAB.

While the legislation apparently excludes interstate operators, the philosophy behind the California bill is dangerous and ill-advised. There are enough restrictions under Federal control without having the states enter economic and safety regulation of air transportation.

The protagonists of such legislation seem to think that states as large as California, Texas, or now Alaska, are exceptions due to their geographic size. Experience has shown, however, that geography and state borders mean very little to the airplane and that only in rare cases have there ever been successful, unsubsidized intra-state air transport operations. Yet some state legislators would create non-essential bureaucratic operations within non-aviation state commissions to regulate a very minor phase of air transport which is actually in need of encouragement and assistance rather than duplicative regulation.

ORIGINATORS OF AIR TRAFFIC CONTROL IN 1936 gathered in Washington recently to honor Mrs. Octavia Freeman (center) as she retired after 32 years of Federal aviation service. She was the "office staff" in the first months of traffic control when the pioneers were "blanketed in" to Federal air traffic control from their positions with various airlines. Seated with her are E. R. Mehrling (left), assistant chief, program control division, Air Traffic Management, and J. H. Huber, Office of Civil Defense Mobilization plans chief. Huber was not in original group. ATC pioneers still in FAA air traffic management, in addition to Mehrling, are, standing, left to right: H. H. McFarlane, Lee E. Warren, Homer F. Cole, R. E. Sturtevant, J. V. Tighe, E. A. Westlake and D. D. Thomas (Thomas was an early controller but not in original group).

Easy way to keep leading edges ice-free

Spray GLIDAIR 17-A Ice Repellent on leading edges, antennae, struts and props before taking off during marginal weather. The special silicone formula of GLIDAIR 17-A prevents ice formation because it polishes easily to a pore-free, hard, glossy surface . . . keeps you safe and worry-free.

Use GLIDAIR 17-A on landing gear and wheel wells, too. It guards against ice buildup from moisture picked up on wet, slushy runways. And GLIDAIR 17-A lubricates moving parts, protects them from corrosive salt and chemicals.

Keep several spray cans of GLIDAIR 17-A Ice Repellent handy for foul weather flight. Available through most private operators, or write for the name of your nearest distributor.

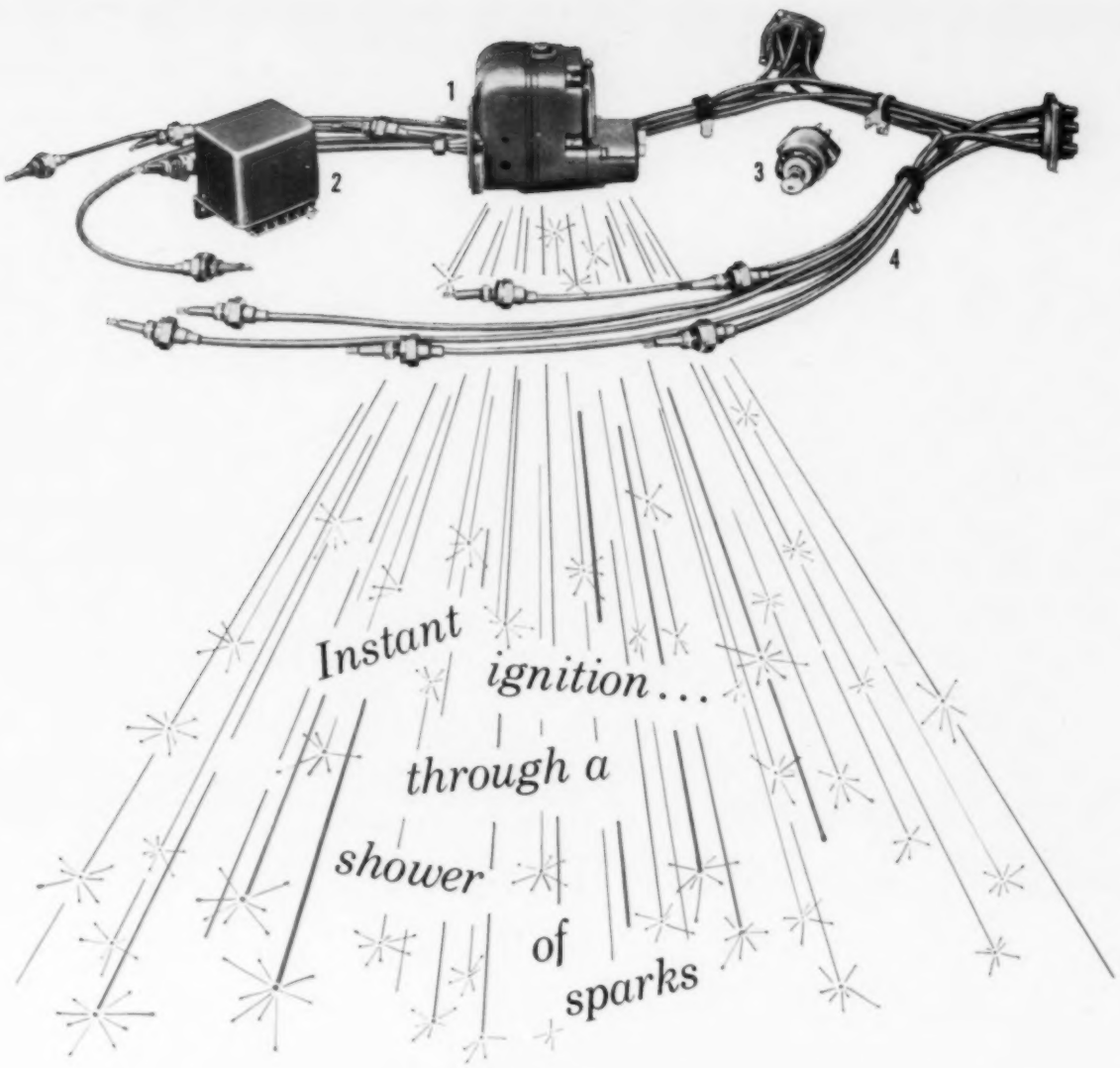
QUALITY Glidden PRODUCTS

GLIDAIR FINISHES FOR EVERY PURPOSE
Aviation Sales Headquarters
THE GLIDDEN COMPANY
1833 South Normal Avenue • Chicago 16, Illinois

GLIDAIR

A D M A

Ask about other superior GLIDAIR products: New G.V.A. fast drying, high gloss metal finish; GLIDAIR Super Renovite Plus high lustre, long lasting cleaner-polish; GLIDAIR Windshield Cleaner for restoring plastic windows and windshields.



BENDIX S-200 IGNITION EQUIPS 80% OF NEW U. S.-BUILT BUSINESS AND PRIVATE AIRCRAFT

BENDIX S-600 LOW TENSION IGNITION HELPS SET NEW ALTITUDE RECORD. Jerrie Cobb, first woman candidate for space flight, flew an Aero Commander to a world altitude record of 37,010 feet last September 20. In her record-smashing flight, officially sanctioned by national and world aeronautic authorities, her aircraft was equipped with a dependable Bendix S-600 low tension ignition system.

Builders of fixed wing aircraft and helicopters, using four and six cylinder engines, have been quick to specify the Bendix® S-200 ignition system because of its easier starting, smoother running, and greater durability. It is now used on four out of five new business and private aircraft.

Quicker, surer starting is accomplished through a new concept in high tension ignition for aircraft. The ignition-starting energy formerly supplied by release of a mechanical impulse coupling is replaced in the S-200 system by a retard breaker and battery-operated starting vibrator which produce a "shower of sparks" at the spark plug. A completely new type of ignition switch automatically controls starting and operation of the ignition system. Radio shielding is improved on the S-200 system through use of the Bendix "feed-thru" capacitor feature.

Aircraft operators wanting the advantages of the S-200 system may obtain it to replace present ignition and are invited to contact Scintilla Division distributors regarding installation, price, and delivery.

1. Retard breaker magneto 2. Starting vibrator 3. Ignition and starter switch 4. Harness assembly

Scintilla Division
SIDNEY, NEW YORK

THE Bendix CORPORATION

These Himalayas' frigid heights present grueling tests for men and machines. Yet, Bell's *standard* 47G-3, on an operational mission for the Indian Government, easily flew over the Barachala Pass at 22,000 feet. This was no *freak* mission. The 47G-3 was fully loaded with regular helicopter and safety equipment, plus fuel and two people. Shortly after this photograph was taken, the 47G-3 landed at La Dakh Valley at 19,600 feet, where it made take-offs and landings with full operational loads. *No other 3-place helicopter in this class has ever matched this performance.*

You may never fly at 22,000 feet. But this mission demonstrates Bell's reserve power to prevent sluggishness at any altitude . . to cruise at the lowest possible operating cost . . to cut maintenance by allowing more flying hours between overhauls. This reserve power is always available to meet flying emergencies and, along with Bell's unequalled autorotation characteristics, makes Bell helicopters the world's safest.

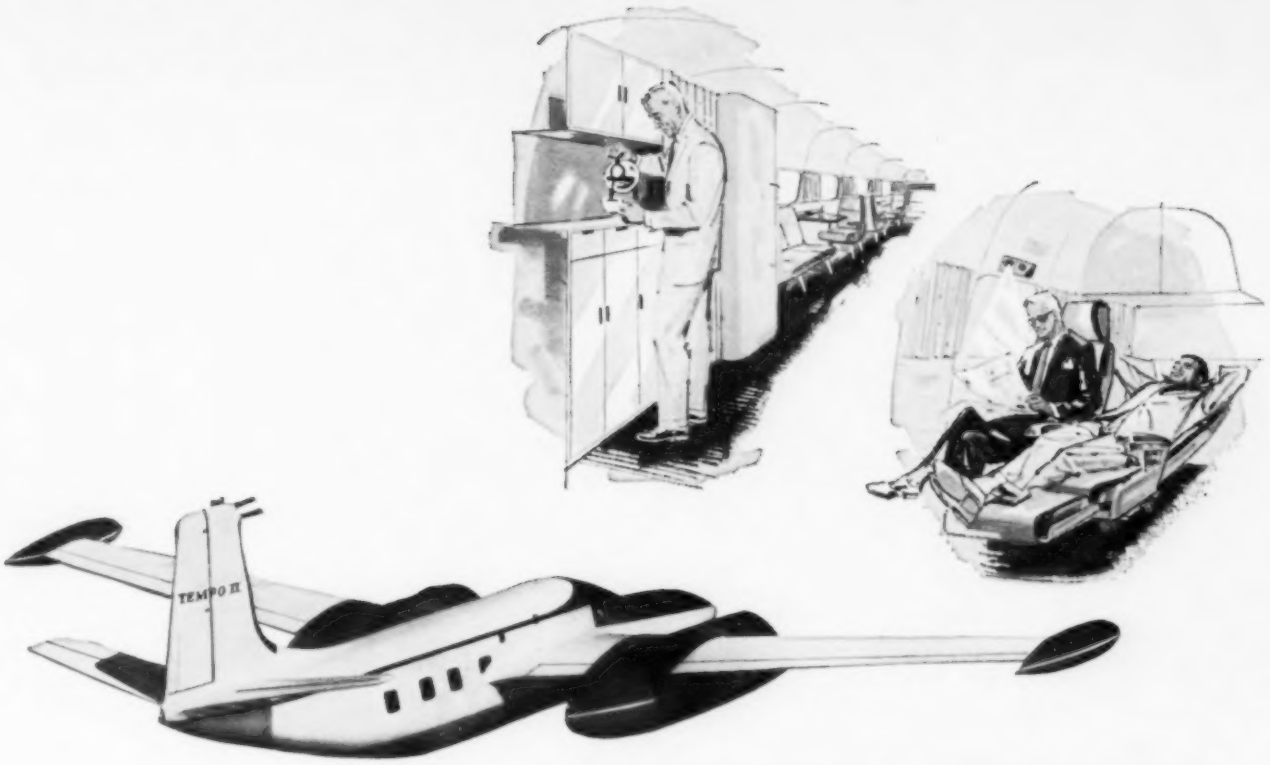
Validate *record runs* before you buy . . at Bell you profit by getting the *full* story. Write: Commercial Sales Manager, P. O. Box 482, Fort Worth, Texas.

from a BELL helicopter, 22,000 feet up!

BELL HELICOPTER COMPANY

FORT WORTH, TEXAS

A DIVISION OF BELL AEROSPACE CORPORATION • A textron COMPANY



TEMPO II

...MAN SIZE, PRESSURIZED, CUSTOMIZED LARGER-BY-FAR THAN ANY OTHER BUSINESS TRANSPORT IN ITS CATEGORY

HEAD-ROOM *...Six feet two inches of head-room in the passenger cabin extends up to and into the cockpit... Neither stooping nor crawling is required by the passengers or pilots in the Tempo II interior.*

WALK-ROOM *...The new, longer-by-far Tempo II cabin has a clear, walk-thru aisleway extending twenty-six feet two inches from the cockpit to the rearmost passenger seat.*

LEG-ROOM *...The entire, man size, custom tailored interior is designed to provide the roominess necessary for work or relaxation... An uncluttered, ten passenger Executive cabin is achieved by locating the full complement galley and full height lavatory aft of the cockpit and forward of the main cabin.*

COMFORT-ROOM *...Both passengers and crew have the space to be comfortable in the pressurized, larger-by-far interiors of Tempo II... Airline proven pressurization, permitting above weather, smooth-air flights, is combined with centrally controlled air conditioning and cabin heating to add to the comfort and convenience found only in the high performance Tempo II.*

The high speed, high performance Tempo II, in addition to being larger than any aircraft in its category, is the only Executive version of the famous Douglas B-26 that can be delivered with an Aircraft Flight Manual, approved under CAR Part 4b formula.

A detailed description of the man size, exclusive Tempo II and an analysis of its performance are available on request.

L. B. SMITH AIRCRAFT CORPORATION
INTERNATIONAL AIRPORT • MIAMI • FLORIDA

Ground crewmen wrestle landing blimp to a standstill.

"...THE EARTH JUST DROPS AWAY..."

A behind-scenes report on the last of the nonrigid commercial airships..... another in a series by

HERB FISHER

international aviation authority, veteran test pilot, author

Ram a Mach-2 jet through the skies and scarcely anyone takes notice anymore. But man's first form of flight—the balloon—still lifts as many eyes as ever. Goodyear's "Mayflower II," the last nonrigid commercial airship, is especially spectacular at night. Used for advertising and public relations purposes, the blimp flashes public service messages along its 150-ft. sides with 3,640 incandescent bulbs. By day, it takes local citizenry up to see the sights of their locale as they've never seen same by airplane. The Mayflower makes seasonal goodwill tours of the U.S., operates winters in Miami. That's where I flew it recently.

By "flew" I mean I took the controls for a while. And for a fixed-wing pilot, there's no sensation quite like it. You feel more like you're sailing than flying. Controlwise, you have to "anticipate" and "compensate"—much like with a sea-going vessel. On takeoff, it's like the earth just drops away from you—rather than *powering* yourself away from *it*. Landing is tricky—slow, steep, tight approaches, the LTA craft subject to every whim of thermal movement. Landing is rather "against the grain" of the fixed-wing pilot, too: You set down right on *top* of a "crowd"—the dozen ground crewmen who must grab the gondola and hold it down.

You cruise at 35 knots. Top speed is 60. The absence of fixed-wing "solid feel" is accented by a 10° nose-down attitude, lack of seat belts and opened windows. Your controls are minimal: A helmlike wheel on the floor by the pilot's seat operates the elevators, controlling pitch-attitude and (since helium provides sole lift) vertical flight path. Foot pedals give directional rudder control. There's no yoke, no stick, no roll or trim controls. Power controls for the outriggered twin 175-hp 6-cylinder air-cooled Continentals are conventional —through props are reversible. Strange instruments stare at you—helium pressure gauges, overhead pull-knobs for air vents and gas pressure control. But two-way radio, ADF and Omni make you feel a little more at home.

The two-ply rubberized dacron airship has no internal framework whatsoever. Air compartments fore and aft compensate for expansion and contraction of the 132,500 cu. ft. of noninflammable helium, under 1¼ inches pressure. Air is expelled as the blimp rises, pumped back in as it descends. Lift and weight are balanced before takeoff by adding or subtracting sandbag ballast. Climb is regulated by the pusher props blowing air through ducts into the aft air compartment; this forces helium forward, deflating forward air space and causing the nose to rise. The procedure is reversed for descent. (If helium purity falls below 96%, lift is impossible.)

Relaxing between flights, Capt. Smith tells Fisher about water rescues he's made with the blimp.

Blimp over Miami . . . rate of climb, 2,400 fpm!

Dependable performance is *vital* to hauling passengers day after day. Superior dependability of new Champion REM40E *Foul-Resistant* spark plugs is discussed by (l/r) Doug Shropshire, Champion representative; Capt. Smith; V. L. Drollinger, Chief Mechanic; and Fisher.

Dean of blimp pilots Capt. Verner Smith and Fisher view Miami Beach from blimp gondola.

Weather presents less of a problem than with conventional aircraft—though violent updrafts *could* push the ship over its 10,000-ft. ceiling. (This would necessitate jettisoning of gas to relieve internal pressure. Then the ship couldn't come down. Everything would have to go overboard — people via parachute.) Strong headwinds only slow the ship. Side winds cause drift, but the blimp can compensate. Weather is more of a problem on the ground: surface winds above 35 knots could roll the ship and dig a prop in the sod.

A great part of the kick people get out of riding the Goodyear blimp comes from the skipper himself, a dynamic old-timer who generates enthusiasm in folksy Will Rogers vein. Capt. Verner Smith reminds one of the classic sea captain of bygone eras—frosty-eyed, weather-lined, full of lore and earthy exuberance. But most fascinating is the way Capt. Smith handles his tricky airship—like it's *part* of him—yet all the while laughing and talking a blue streak as he points out the wonders below like he'd just discovered them.

Born in the 1890's, Capt. Smith joined Goodyear in Akron at 17, helped build and flight-test first blimps, trained other pilots. By sheer "seat-of-the-pants" navigation, he pioneered cross-country blimp routes in the 20's. He holds LTA, free-balloon, and heavier-than-air licenses. During the war, Capt. Smith was in charge of LTA training at Lakehurst and trained 1,700 naval officers in blimp operation! He retired with the permanent rank of Captain.

"Herb, you didn't come down here *just* to find out what makes *me* tick—you want to find out *why* we've always used nothing but Champion plugs to fire those two outboard engines. Well, let me tell you: It's the same reason you've heard a thousand times before, wherever a flight operation demands *peak* engine performance and *dependability*. That's it—*dependability*. For my money, no other spark plug can match Champions for *long-life dependability*. We just leave ours in till the rpm's start dropping—700 hours or more—then clean 'em up and put 'em *back* in.

"The plugs you're flying on right now? They've got 1,800 hours on 'em, Herb!"

Capt. Smith cited as an example of Champion dependability the telecast of the Orange Bowl game. TV cameras were trained on the players as the blimp hovered 1,000 feet up. Blimp engines idled for four hours. Plug fouling—not a trace.

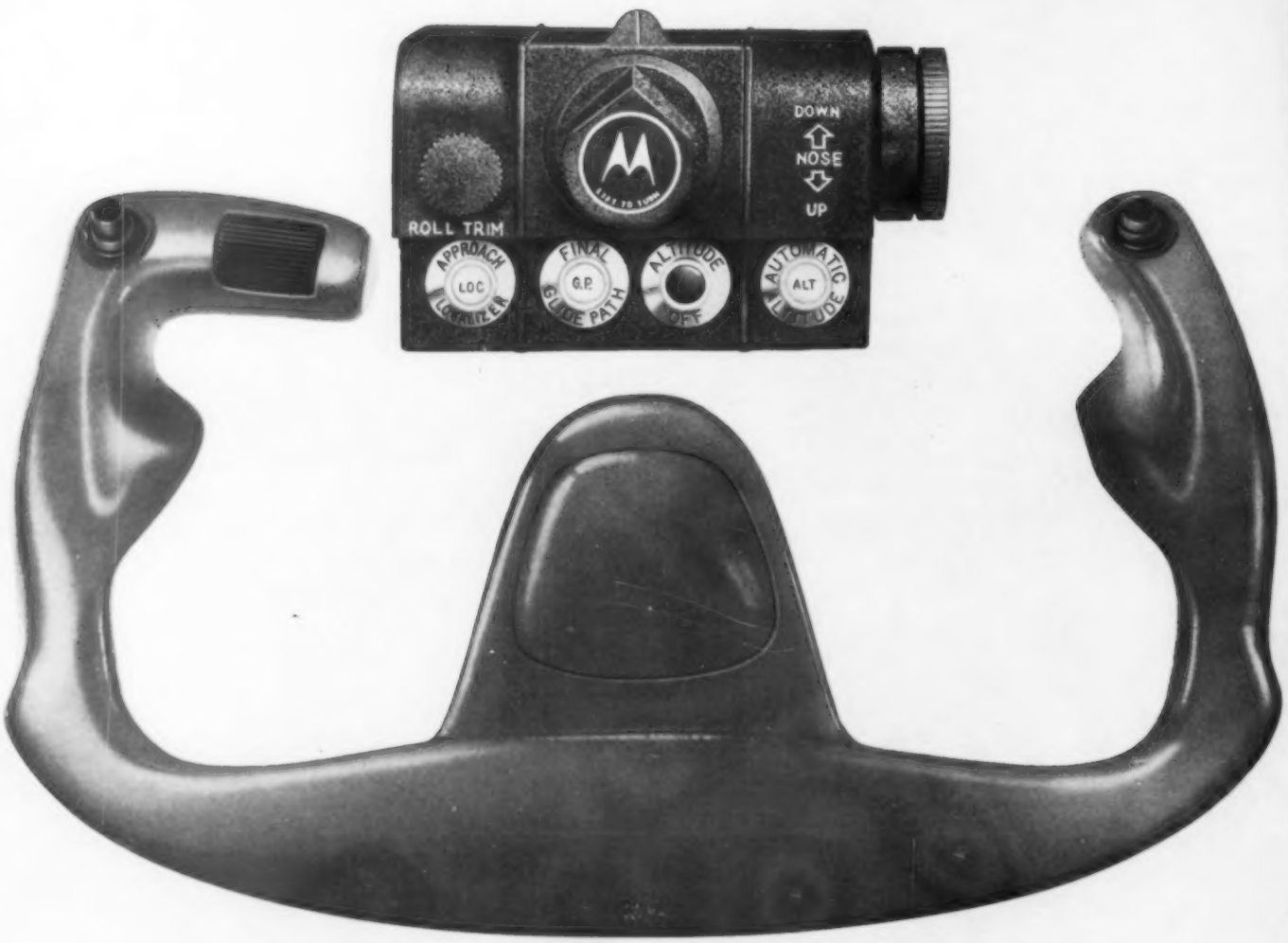
If anyone knows about dependable equipment, Capt. Smith should: He remains today undisputed dean of the world's blimp pilots *with 21,000 hours—more than anyone else.*

CHAMPION SPARK PLUG COMPANY

TOLEDO 1, OHIO

Designed and built by Goodyear Aircraft Corp. of Akron, "Mayflower II" is the 13th nonrigid airship operated by Goodyear since 1928. Its mission: Goodwill tours of the U.S., promoting civic affairs and other worthy causes.

THE L-2 IS FLYING MORE AIRPLANES THAN ANY OTHER AUTOPILOT



Only experienced 3 axis flight control system available for the general aircraft fleet

Automatic ILS approach ▪ Automatic constant bank turns ▪ Automatic constant angle of climb or descent ▪ Automatic climbing or descending turns ▪ Automatic altitude control ▪ Heading automatically maintained ▪ Turbulence materially cushioned ▪ Fatigue and strain effectively relieved ▪ *And* it's dependable...guaranteed ...and backed by Motorola sales and service facilities at every major U.S. airport. See your Motorola dealer for a practical demonstration of the L-2 autopilot. Or write to us for full details.

MOTOROLA *Aviation Electronics Inc.* A SUBSIDIARY OF MOTOROLA INC.

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Piper Aztec at Grand Bahama Club. AutoFlite Aztec with full 2½ IFR radio, ADF, and automatic flight, $58,860. Standard model, $52,990.

PIPER AZTEC

A TOUGH, RUGGED 200 mph AIRPLANE *THAT NEEDS NO PAMPERING!*

CHOSEN BY U.S. NAVY. Aztec is now in service with U.S. Navy. Designated UO-1.

CHOSEN BY CANADA. Department of Transport purchased Aztec following satisfactory operation of five DOT Piper Apaches in rugged Canadian flying conditions.

You get much more than 200 mph transportation in the Aztec—you get an airplane that's designed and built to work without pampering.

This is not just idle talk. The Aztec is rugged and tough. It can operate from fields other twins avoid because the Aztec has a big, full-size nose wheel and lowest stalling speed (62 mph). And it needs less room to get in and out.

The Aztec's ready to work when you are, too. So thoroughly perfected is its basic design, so thoroughly improved are the hydraulic, electrical and powerplant systems that expensive maintenance or irritating trip delays are practically non-existent.

There's no pampering when it comes to loading the Aztec, either. It's the only twin in its class that can carry full passenger load (five people), full equipment (complete 2½ IFR radio system, automatic flight), full 144 gallons of fuel (up to 8 hours range)...plus 175 pounds left over for baggage or other equipment.

For performance, price, perfection—and pamper-proof flying—take a good long look at the Aztec.

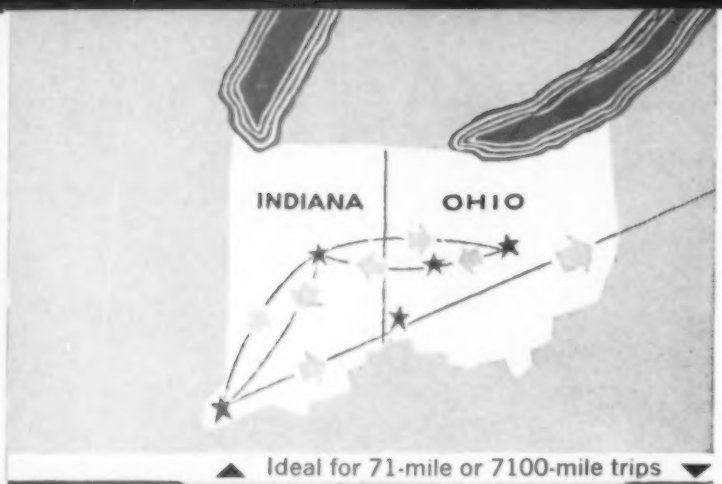
AZTEC SETS SPEED RECORD

160 hours of hard, relentless flying over ocean, desert and jungle – nearly 26,000 miles flown. That's the new piston-powered round the world speed record set by Max Conrad with official observer Dick Jennings in Piper Aztec N4544P. "Except for one precautionary exhaust stack replacement, we just put gas and oil in it," reports Max Conrad. "The Aztec and the Lycomings operated faultlessly. On a flight like this it's a great help to have confidence in your equipment."

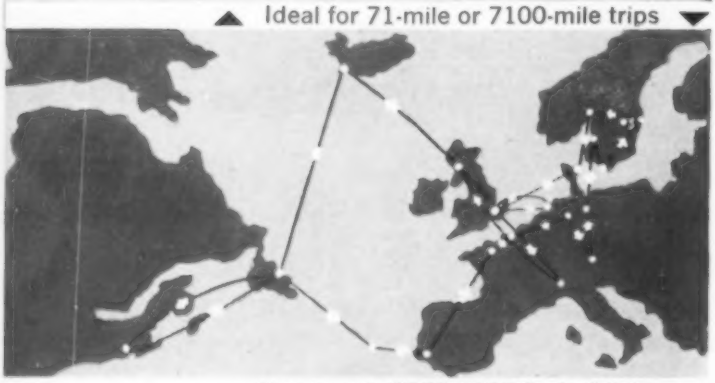
ATTRACTIVE LEASE AND FINANCE PLANS

For an Aztec demonstration, see your Piper dealer or write for Aztec catalog, Dept. F-4.

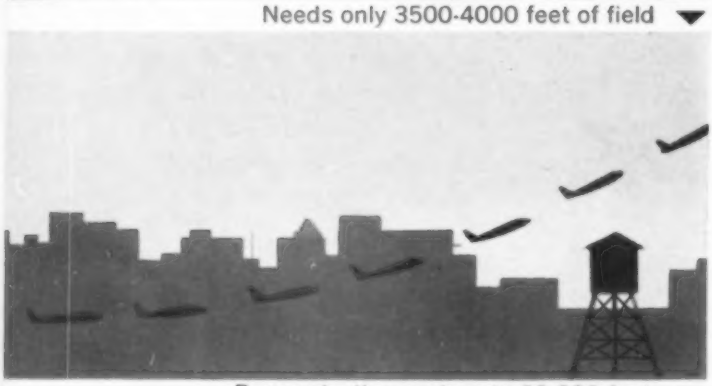
PIPER AIRCRAFT CORPORATION
Lock Haven, Pennsylvania



▲ Ideal for 71-mile or 7100-mile trips ▼

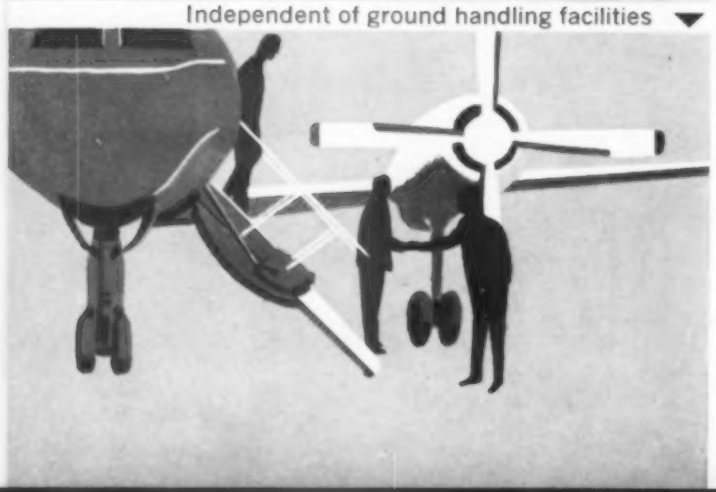


Needs only 3500-4000 feet of field ▼



Pressurization system to 30,000 feet ▼

Independent of ground handling facilities ▼



The Gulfstream: the most do-everything business airplane there is!

The only aircraft in its class designed exclusively as a business airplane, the Grumman Gulfstream offers unique flight-and-ground flexibility. The following case history proves it.

Here's a factual example of Gulfstream flexibility. It's a story of how one Grumman Gulfstream was utilized as a sales tool by a well known chemical manufacturer on two important field trips. On both these trips the passengers were able to fly above weather or traffic, in comfort, in Gulfstream's pressurized cabin. They were able to land and take off from short fields close to their destinations, completely independent of ground handling facilities. And they were able to get to their destination faster because of Gulfstream's high door-to-door time and 350mph cruise speed.

TRIP NO. 1, 17½ HOURS. This field trip was arranged through Ohio and Indiana to bring together a group of distributors, providing each with an opportunity to observe one another's operations, and also to help integrate local with national sales promotion. On this trip, *during*

a single day, the Gulfstream made 8 stops to visit 6 distributors, and covered 1,356 miles. Cities visited included Evansville, Indianapolis, Dayton and Columbus (only 71 air miles apart) and Cincinnati. That night the plane returned to New York. Minimum number of passengers was 5—maximum, 12.

TRIP NO. 2, 17 DAYS. This same company visited its European distributors to set up new outlets for its products and to outline plans and programs for the coming year. Fourteen countries were visited. Meetings were held and plant tours were conducted in Paris, London, Zurich, Lisbon, Brussels, Cologne, Stockholm, Oslo, Copenhagen and many other cities. The manufacturer's comment on this trip—his second overseas in six months—was "on schedule—maintenance zero."

Flexibility like this—flexibility that makes the Gulfstream ideal for 71-mile or 7100-mile trips—is one reason why over 60 Gulfstreams are now in operation. Other reasons are Gulfstream's proven safety, reliability, comfort and beauty. In short, it's a sound business investment.

Corporate executives and pilots may arrange for demonstration flights through the following distributors: *In the United States:* Atlantic Aviation, Wilmington, Del. Pacific Airmotive, Burbank, Cal. Southwest Airmotive, Dallas, Tex. *In Canada:* Timmins Aviation, Montreal. *In Europe:* Atlantic Aviation Export Corporation, London, England.

GRUMMAN

AIRCRAFT ENGINEERING CORPORATION

Bethpage • Long Island • New York

1961 MODELS OF FOUR-PLA

	Cessna 172	Piper Cherokee	Cessna 175	Cessna 180
Price	$9,795	$9,995	$11,995	$15,2
Eng. and Hp.	C-145	L-160	C-175	C-2
Landing Gear	Fixed	Fixed	Fixed	Fi
Gross Wt., lbs.	2,200	2,200	2,350	2,6
Empty Wt., lbs.	1,260	1,195	1,325	1,6
Useful Load, lbs.	940	1,005	1,025	1,0
Useful Pct. of Gr. Wt., %	42.7	45.8	43.6	4
Std. Fuel Cap., gals.	42	36	52	
Opt'l. Fuel Cap., gals.	—	50	—	
Top Speed, mph.	139	132	147	
Stall Spd., mph.	52	56	51	
Cruising Spd., % hp.-mph.	70-130	75-132	70-140	70-
Cruising Spd., % hp.-mph.	—	55-120	—	
Range, fuel cap.-mi.-hrs.	42-565-4.4	50-675-5.5	52-590-4.2	65-675-
Range, fuel cap.-mi.-hrs.	42-790-7.9	50-900-7.5	52-755-7.2	65-845
Rate of Climb, fpm.	730	680	850	1,0
Service Ceiling, ft.	15,100	15,000	15,900	21,0
Take-off Dist., ft.	780	775	735	
Landing Dist., ft.	680	550	590	
Wing Area sq. ft.	174	160	174	
Wing Loading, lbs. per sq. ft.	12.6	13.8	13.5	
Pow. Loading, lbs. per sq. ft.	15.2	13.8	13.4	
Span, ft.-ins.	36	30	36	
Length, ft.-ins.	26-5.5	23.4	26.4	
Height, ft.-ins.	8-8	7-4	8-8	
Bag. Cap., lbs.	120	100	120	

NOTE: Preliminary details on new-production 5-place 260-hp. Navion Rangemaster inc

Beech N-35 Bonanza, pictured by Jim Yarnell off Meigs Field over Lake Michigan at Chicago, is $26,500 high-performance four-place. At 3,125-lbs. gross weight, it tops 205 mph., cruises 195 mhp.

Choose Your 4-Plac

THERE is no such thing as an everyman's airplane — no single airplane can meet everybody's requirements. But among 4-place airplanes, everybody can find a wide selection to choose from, as shown by the accompanying FLIGHT MAGAZINE compilation of data on 13 different 4-place models currently in production.

What's your choice? It all depends on your needs. If price determines your selection, the 13 models range from $9,795 to $26,500. Although the Beech N35 Bonanza is tops, price alone certainly does not mean that one Bonanza is worth 2.5 Cessna Model 172's at the lowest price listed. The two are separated by quite a spread in power, speed, useful load, climb and cruising range, but the lower-priced 172 has impressive advantages, too, when it comes to matching an airplane to an individual owner's requirements. The little Cessna, for example, emphasizes pure simplicity and satisfies thousands of owners because it requires less investment, less maintenance, less sophistication in equipment and skills. Even at its low price, it features excellence in handling, construction, me-

New Bellanca has 260-hp. fuel injection Continental engine, is in 200-mph. category and offers 920-mile range at 196 mph. on capacity of 60 gals. of fuel. It sells for $18,990. The Bellanca has the highest rate of climb of any 4-place — 1,750 fpm.

Newest 4-place on the market is the low-wing, all-metal Piper Cherokee at $9,995. Its 1,005-lb. useful load equals 45.8% of its gross weight and the 160-hp., 132-mph. low-wing is available with 50-gal. fuel capacity for range up to 900 miles in 7.5 hrs.

BEST COPY AVAILABL

USINESS AIRCRAFT IN CURRENT PRODUCTION

FACTORY DATA

Cessna 182	Mooney 21	Piper Comanche 180	Bellanca 260	Piper Comanche 250	Beech Debonair	Cessna 210	Meyers 200B	Beech N35 Bonanza
$15,490	$15,995	$16,445	$18,990	$20,485	$21,750	$23,450	$23,750	$26,500
C-230	L-180	L-180	C-Inj.-260	L-250	C-Inj.-225	C-Inj.-260	C-Inj.-260	C-Inj.-260
Fixed	Retract.	Retract.	Retract.	Retract.	Retract.	Retract.	Retract.	Retract.
2,650	2,450	2,550	2,700	2,900	3,000	2,900	3,000	3,125
1,530	1,490	1,510	1,690	1,630	1,745	1,740	1,870	1,855
1,120	960	1,040	1,010	1,270	1,255	1,160	1,130	1,270
42.3	38.4	40.0	37.5	43.8	41.8	40.0	37.7	41.0
65	49	50	40	60	50	65	82	50
—	—	60	60	90	70	84	—	80
167	190	167	208	190	195	199	204	205
56	57	61	62	65	60	59	54	60
70-157	75-180	75-160	75-203	75-181	75-185	75-190	75-204	75-195
—	67-172	—	52-175	—	65-180	70-187	—	65-190
65-660-4.2	49-900-5.3	60-900-6.0	60-920-4.9	90-1,100-6.4	70,1,160-7.5	65-755-4.0	82-1,000-5.0	80-960-4.9
65-835-7.1	49-1,130-7.7	60-1,100-7.5	60-1,001-5.7	90-1,650-11.2	—	65-1,075-8.3	82-1,380-7.8	80-1,215-7.6
1,030	1,150	910	1,750	1,350	960	1,300	1,350	1,150
19,800	20,000	18,500	22,000	20,000	18,400	20,700	20,000	19,200
555	600	750	400	1,000	940	740	—	745
560	550	600	450	650	635	520	—	505
174	167	178	161.5	178	177.6	175.5	161.5	181
15.1	14.7	14.3	16.7	16.3	16.9	16.5	18.7	17.3
11.5	13.6	14.2	10.4	11.6	13.3	11.2	11.5	12.0
36	35	36	34-2	36	32-10	36-6	30-7	33-5.5
27-1	23-2	24-9	22-11	24-11	25-6	27-4	24-4	25-2
9-5	8-4.5	7-4	6-4	7-4	8-3	8-2	7-4	6-6.5
120	120	200	200	200	270	120	200	270

50-lb. gross, 1,200-lb. useful, cruise speeds of 194 (max.), 181 @ 65% hp. and 177@ 50% hp., and 1,475-1,858-mi. range.

Aircraft From Many New Models

chanical integrity and cabin comfort.

But on the other hand, the man who chooses the Bonanza has requirements which can not be met with simplicity alone — he finds the larger investment profitable because it gives him greater power, speed, payload, range and comfort in a combination that can only be described as sophistication in aerodynamic, mechanical and electronic marvels. Because the fully-equipped high-performance 4-place represents the ultimate, it is usually flown by pilot-owners who have upgraded their economic justification and piloting skills in order to obtain fullest possible usefulness.

Different airplanes were designed to satisfy different requirements and uses. Take, for example, the new all-metal Mooney Mark 21. The philosophy behind its design was to obtain maximum aerodynamic efficiency. To achieve this, it is literally a "compact of the air," as is the Volkswagen among autos, with the result that the Mooney cruises 180 mph. and is the only 4-place business plane capable of matching its engine's power rating with speed — 180 mph. with a 180-hp. engine. At a speed of 169 mph., the Mark 21 gets 18.3 miles per gallon and at 146 mph. it gets 23 mpg.

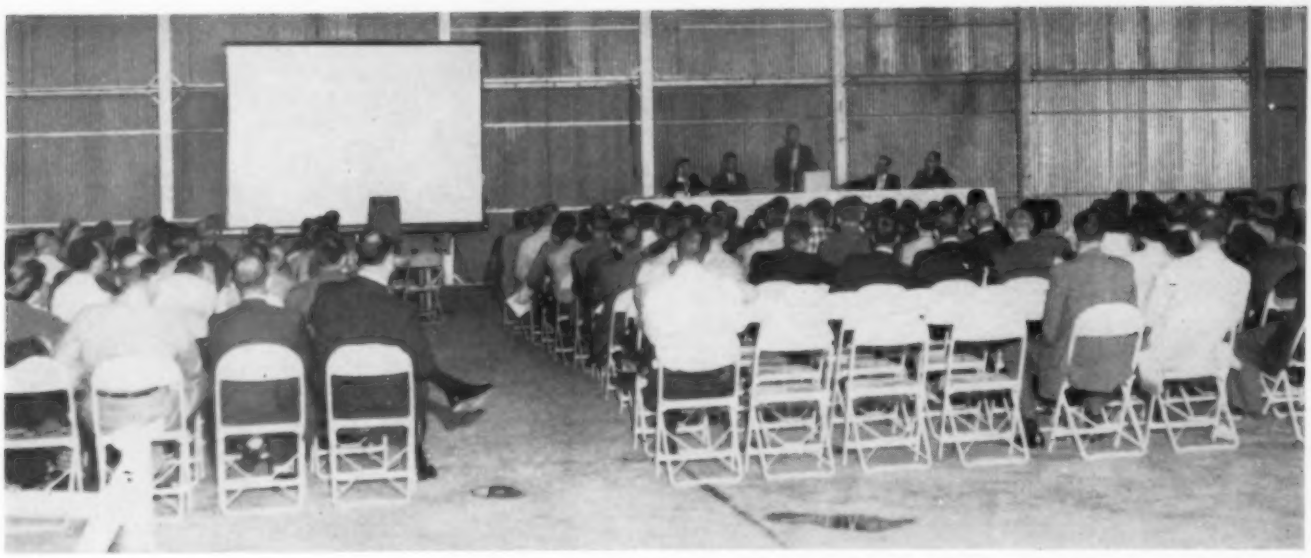
There are different ways to measure a 4-place airplane's efficient usefulness. Some, for example, offer more useful load in ratio to gross weight. FLIGHT MAGAZINE calls this ratio an airplane's "useful percentage of gross weight" and the accompanying table specifies this percentage for each of the models shown. Tops in this department, as a measure of usefulness to the owner, is the newest of all the 4-placers —

(Continued on page 55)

New all-metal Mooney Mark 21, pictured by Tony Linck, is the only 4-place business plane which matches horsepower with miles per hour — it is powered by a 180-hp. Lycoming and cruises 180 mph.

Cessna offers a wider variety of 4-place airplanes than any manufacturer, ranging from the $9,795, 145-hp. Model 172 to the $23,450, 260-hp. Model 210.

AVAILABLE



Proof that airmen will turn out en mass to hear the experts is this photo showing some of 500 who attended a recent flight safety seminar at Addison Airport in Dallas. Local groups and the National Pilots Association joined in sponsoring the seminar. The FAA's "Air-Share" project is an extension of the airmen's seminar format and should draw heavily all over the country.

Project Air-Share

AFTER he took office last month in Washington, the new Federal Aviation Agency Administrator, Najeeb E. (Jeeb) Halaby, lost no time in going to pilots and aircraft owners for cooperation. One of his first acts was to launch "Project Air-Share (air your views; share the benefits)." This project is built around a series of regional conferences in which FAA will emphasize that the aviation community shares with FAA the joint responsibility and rewards of promoting air safety and progress.

The announced purpose of the project and its conferences is "to acquaint the people of general aviation with certain problem areas facing the FAA; and to enlist the cooperation of all concerned in encouraging and fostering civil aviation, as desired by Congress and the aviation community."

The conferences will be conducted by the Safety Regulations Division, Bureau of Flight Standards, of the FAA. The main interest of the Bureau of Flight Standards is "to explain the problems of general aviation which are related to Federal regulatory policy and to seek advice concerning possible solutions."

While the Safety Regulations Division will conduct the conferences, the Operations Division of the Bureau will participate in the presentation of the items on the agenda and will lead the discussion from the floor. The discussions and briefings are open to all civil aviation people and any others interested. Flying in the late 1960's will be the theme. The plan is to anticipate problems of general aviation and seek practical solutions.

Conference Dates and Places

Here is the schedule of the regional conferences:

April 11—Monica Hotel, Santa Monica, California.

April 19—Hotel St. Nicholas, Springfield, Illinois.

April 27—Hotel Shelburn, Atlantic City, N. J.

May 2—Hotel Heidelberg, Jackson, Mississippi.

In May, also, meetings will be conducted in Alaska and Hawaii by FAA regional offices in those areas.

Commenting on the project, Halaby said: "While the safety record of business and commercial flying is good, more thought must be given to the needs of the 'Sunday pilots' so that family flying can prosper and expand.

"It is FAA's job, partly through education, to help some 360,000 active pilots upgrade their skills partly through improved navigation aids, to help reduce the chance of pilot error; and partly by rule-making, to develop more exacting safety standards. Willing compliance on the part of all pilots is also necessary.

"We shall adopt no more regulations than are strictly necessary and shall appeal to the pilots' common sense so that those we do adopt will be respected.

"Among the problems that may call for rule-making are 'cribbing' in airmen exams, which certainly must be checked; greater control by instructors over student pilots now flying ad lib; new classes of rotorcraft pilot ratings to insist on the skills needed for this different class of aircraft; special ratings for the new light turbine planes that will be flying, and several other items.

"We believe that open discussion, as planned in the Air-Share meetings, is a good American way to approach such problems before any semi-final rules go out for comment. From the regional conferences, we expect pilots to go home and hold local Air-Share meetings to spread the word throughout the entire pilot group.

"The briefings also will explain new FAA aids such as the flight following service, which gives pilots special radioed information on weather and any special hazards ahead from more than 400 flight service stations across the country."

Agenda for Conferences

For the first round of conferences (further conferences may be arranged), each meeting will be devoted to essentially the same agenda. Here is the first agenda, as issued by the FAA:

Introductory briefing on general aviation and the accident picture followed by discussion of the following:

1. WRITTEN EXAMINATIONS. At present, there are no prerequisites for taking the written examination for a pilot or a flight instructor certificate, or for an instrument rating. The examination may be taken by anyone

without preparation or qualifications. Many persons have taken these examinations in order to learn the contents, so that "keys" may be prepared and sold. This practice, of course, compromises the effectiveness of the examination. Discussion of this problem should include possible solutions, such as establishing reasonable prerequisites for taking the tests.

2. INSTRUMENT RATINGS. Practical tests for instrument ratings may be taken on low frequency ranges, while actual instrument operations are generally conducted on airways equipped with VHF navigational aids. Flight training for such rating often involves local flying only, whereas actual instrument operations take place in cross-country flying. Thus, there are instances of pilots flying under conditions which they have not experienced while training for their rating. Also, since instrument flight by helicopters is now a reality, the present instrument rating, which is designed to meet the requirements for airplanes, is not realistic.

3. FLIGHT INSTRUCTOR PRIVILEGES, STUDENT PILOT SUPERVISION, AND FLIGHT INSTRUCTION. A student pilot is not required to obtain additional dual flight instruction after solo, unless he flies solo cross-country. After endorsement for solo cross-country, no further dual is required until or if he becomes an applicant for a private pilot certificate. At that time he must show 3 hours of dual obtained after the first solo cross-country flight. The flight instructor has little control of the student, although his effectiveness as an instructor is judged on the performance of his students. It is not practical for the FAA inspector to evaluate the ultimate effectiveness of flight instructors under the foregoing conditions. Some people also feel that it is unwise for the student pilots to operate for unlimited periods of time without supervision or checks.

Industry has complained of hardship and inconvenience caused by the current FAA policy of requiring that most applicants for certificates and or ratings be flight tested by FAA inspectors. It has been suggested that the FAA more closely supervise flight instructors, who would then be given more control of student flight activities and be authorized to flight test their own students.

There is some confusion between dual instruction and flight instruction. Some student pilots have taken flight instruction from other than a certificated flight instructor, and were not aware that it could not be accredited as dual time required for solo, solo

Pilot Pointers

FAA Asks for Suggestions

ALL airmen last month received a form letter from N. E. Halaby, the new FAA Administrator, from which the following is an excerpt:

"I will welcome, and every FAA employee should welcome, your suggestions as to how we can better serve the particular phase of aviation in which you are interested. Give us your ideas, not just your gripes. I assure you that every suggestion and idea will receive thoughtful review and careful consideration. Signed, N. E. Halaby."

Pilot Offers His Ideas

Dear Jeeb: I have your March 3 letter to all airmen. Jeeb, I'm for you, the President and aviation, so how about considering the following:

KEEPING UP WITH CHANGING RULES: As an active pilot (I fly a Twin Beech D18S), I realize how difficult it is to keep up with Civil Air Regulations Part 60 (Air Traffic Rules) and I have now written the Government Printing Office for the latest revisions.

Here's my suggestion: Most pilots take physical examinations one or two times a year. If medical examiners kept on hand in their waiting rooms a supply of up-to-date CAR Part 60 air traffic rules, and a poster calling attention to a stack of them by the door, most pilots would pick up a copy of these rules at the time of taking their physical examination. This poster should bring home to all pilots the fact that "ignorance of the law excuses no one."

STANDARD SPEED RULES FOR AIRPORT CONTROL ZONES: I have resolved to be alert, and to give way to slower aircraft, as near misses and experience remind me how futile and nearly impossible it is for a slower aircraft to maneuver to avoid collision with a faster aircraft. I believe the average pilot descending for landing at an airport tends, at times, to be a hot-rodder racing for a good position at the outer marker or base leg position. The old speed rules applying only to airport high-density zones should apply to all airport control zones. All airports now equipped with surveillance radar and approach control communication frequencies should have speed rules that apply at much higher altitudes and over a 20 to 30-mile radius to match existing practices of initial VFR position reporting to Approach Control.

AIRBORNE DISTANCE MEASURING EQUIPMENT: It was impossible for me to attend the March 22 conference in Washington for the discussion of proposed requirements for Distance Measuring Equipment. Ditto for most pilots. Therefore our views were not made known. I sincerely hope no binding rules or regulations were arrived at during the conference, or later, that will make it mandatory for private airplanes smaller and slower than 300 mph. to carry Distance Measuring Equipment around in order to fly IFR in high-density control zones.

In fact, I am an airborne radar transponder booster. Because my 9,000-lb.-gross Beech Twin has very little payload left, I do not believe this small airplane, or any other airplane up to about 20,000 lbs. gross, can afford the weight penalty, installation space and the cost of both DME and radar transponder equipment.

DME or Tacan equipment gives distance information to the pilot only. This information must be relayed by the pilot to the traffic controller over already-crowded and sometimes saturated voice communication channels. This is *indirect* control.

AIRBORNE RADAR TRANSPONDER WITH AUTOMATIC ALTITUDE REPORTING: I trust the FAA will feel it is justified, in the interest of air traffic safety, to enter a crash program for the refinement of, and solving of the operational difficulties and limitations of, present-day radar transponders, and implementing automatic altitude reporting as part of the transponder function. Radar transponder information is received by ground stations and applied to the control of air traffic. This is *direct* control. The only voice communication necessary is the assignment of a transponder channel to the individual airplane.

HERE'S ANOTHER IDEA: I believe aircraft flown by only one pilot IFR in high-density zones should be equipped with an automatic pilot which has altitude-hold, so that the airplane will not deviate from its course and altitude while the pilot checks his charts for re-routing, fix and frequency information, etc.

Thanks for the invitation to offer suggestions and ideas, Jeeb. I'll have some more to offer next month on this page.—FRED K. DICK.

(Brief comment from readers welcomed and solicited.)

cross-country or private pilot certification.

4. RENEWAL OF AIRMEN CERTIFICATES. FAA has received various recommendations concerning the need for a periodic renewal of airmen certificates. The reasons vary from the need to know the number of current airman certificates to the need for periodically insuring that airmen are currently qualified and eligible to hold their certificates.

5. TYPE RATINGS. An aircraft type rating is required of the pilot-in-command of an aircraft exceeding 12,500 lbs. maximum certificated weight when carrying passengers or operating for remuneration. Airplanes of this size are normally operated under instrument flight rules. Airline transport pilots are required to demonstrate instrument capability when taking a type rating test; however, this is not a requirement for private or commercial pilots.

Indications are that in the near future there will be many small turbine-powered aircraft of less than 12,500 lbs. weight. As the procedures, operating techniques and fuel management of turbine-powered airplanes are quite different from those of piston-engine types, some feel that type ratings should be required.

6. IFR TAKEOFF WEATHER MINIMUMS. Take-off minimums do not apply to operations conducted under the General Operation Rules, Part 43 of the Civil Air Regulations. Over the years there have been incidents and accidents involving Part 43 operators making take-offs at minimums lower than those authorized for other operators. This raises the question of why this should be tolerated in the Civil Air Regulations.

Najeeb Halaby (above) was sworn in recently as new FAA administrator.

7. LIMITED PILOT CERTIFICATE. Over the years, there has been a continued updating of the private pilot certificate requirements, resulting in a general raising of standards. Many believe that there should be a lower class of pilot certificates provided for those pilots who wish to conduct local flights only, and that such action would do much to stimulate flying activities.

8. AIRCRAFT RATINGS. At present, all aircraft using rotating airfoils as a source of lift are grouped under the category "rotorcraft." The majority of such aircraft now in service are helicopters; however, there are some gyroplanes and indications are that there will be many others. Flight characteristics of the helicopter and gyroplane differ widely, and pilots qualified to fly one are not necessarily capable of operating the other. A further breakdown in this category appears to be desirable.

Other items are expected to be brought up in open discussion.

Halaby Writes All Airmen

An open letter addressed to "Dear fellow airman," over the signature of FAA Administrator, appealed for ideas, suggestions and cooperation. Halaby's letter, dated March 3, follows:

"Today, in President Kennedy's office, I was sworn in as Administrator of the Federal Aviation Agency. As one of my first steps, I want to express, through this informal letter, my interest in you and our common role in the future of aviation. We should consider two ideas together: first, the FAA is an organization dedicated to serving the aviation needs of the entire Nation and all of its citizens; second, the responsibilities inherent in aviation fall not only upon those of us who serve in government, but upon you as a member of the aviation community. We must work toward law and order as well as for

(Continued on page 56)

FIRST ADVISORY GROUP ASSEMBLED BY FAA ADMINISTRATOR NAJEEB HALABY is pictured below. Seated, left to right, are T. P. Wright, former CAA administrator; James T. Pyle, FAA deputy administrator; Mr. Halaby; E. R. Quesada, outgoing FAA administrator, and Fred Lee, former CAA administrator. Standing, left to right, are: W. B. Harding, chairman of Pres. Eisenhower's aviation facilities study group; P. W. Cherington, Pres. Eisenhower's special aviation consultant; and facilities group members J. G. Bennett, Gen. H. R. Harris and J. F. Lederer. Also present at the meeting, but not pictured, were former CAA administrators D. W. Rentzel and Charles F. Horne.

Two-place Aerocar has fan-cooled, 143-hp. Lycoming shafted to pusher prop behind tail, cruises 100 mph., and has range of over 300 mi. It is FAA certificated, has logged over 1,000 flight hours. Photo was made by Tom Dillard of the Dallas News.

Temco May Produce Flying Auto

IF sufficient firm orders are obtained prior to July 1, Temco Missiles & Aircraft Division of Ling-Temco Electronics, Inc., of Dallas will tool up for quantity production of Molt Taylor's long-famous and widely-demonstrated Aerocar, the flying automobile. This is provided in a contract Temco signed last month with Aerocar International Corp., of Ft. Worth, a sales organization headed by Roy Hyde with Taylor as vice president in charge of engineering. Both Hyde and Taylor are confident sufficient orders will be obtained to launch the project. No numbers were released, but Hyde and Taylor said they're going to set up 21 distributorships and 772 dealerships; most of them probably will be automotive dealers. With one demonstrator each, this calls for almost 800 Aerocars.

Long-since FAA certificated as a flying auto, the Aerocar would be priced at just under $14,000. It will gross 2,100 lbs., providing a 600-lb. useful load. The 1,500-lb. empty weight includes 1,100 lbs. for the auto and 400 lbs. for the wing-tail cone-empennage-prop unit, which is easily removed or installed within 5 mins. and rolls on built-in retractable wheels when towed behind the auto as a trailer. As an aircraft, the Aerocar cruises 100 mph., lands at 50-55 mph., takes off and lands within 650 ft., climbs 550 fpm. at sea level, has a 12,000-ft. ceiling and a 300-mile range with 23.5-gal. fuel capacity.

Wing and tail were removed in less than 10 mins. at demonstration, towed as a trailer. Lycoming engine is shafted to front-wheel fluid drive for auto use, with 40-hp. effective road power giving 50-60-mph. road speed. Two-place seat is 44 ins. wide.

Prototype of the Dassault Communaute is 8/10ths the size of the 10-place production model, which cruises 300 mph. at 20,000 ft. and has a 2,000-mile range with reserve. Equipped price is $456,000, delivered at Bordeaux.

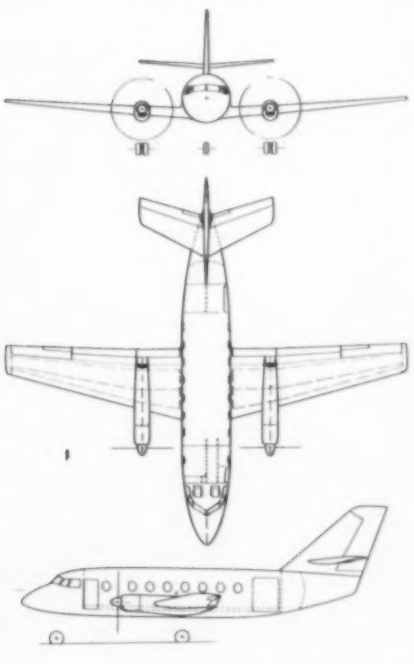
French Turboprop For Executives

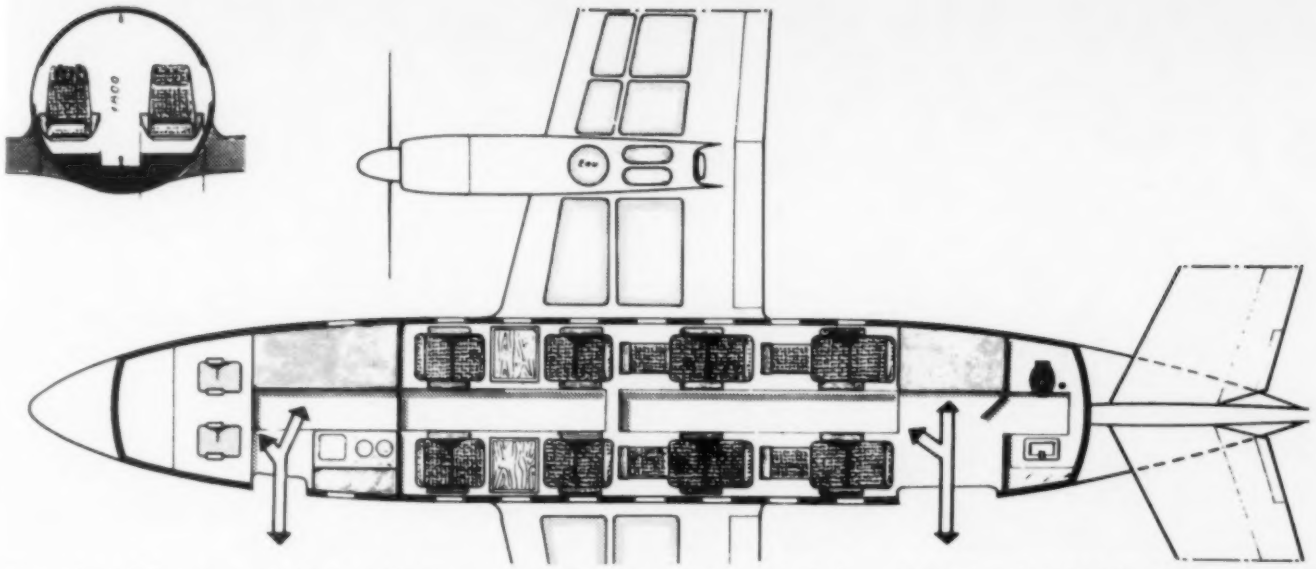
A FRENCH manufacturer, Dassault at Bordeaux, is upgrading a medium-category 300-mph., 10-place turboprop twin to meet executive aircraft speed-range-comfort requirements and a Chicago representative of the firm plans to take a group of executive pilots to Bordeaux late in April to view the interesting project, which has already aroused considerable interest in the U. S.

In France, the U. S. pilots will fly the prototype Dassault MD 415 "Communaute" for their personal evaluation of the design. They will also inspect Dassault's plywood mock-up of the scaled-up production model, which will be produced by Sud Aviation at Toulouse, manufacturers of the Caravelle airliner. The prototype, which has been flying for some time, is eight-tenths the size of the production model.

Don Payton, president of Turbo Flight, Inc., 110 N. Wacker Drive,

Communaute A1 is powered by 1,000-ehp. Turbomeca Bastans. Dimensions include 60.6-ft. span, 55.7-ft. length and 22.1-ft. height.





Floor plan of Communaute A1 shows 8-passenger cabin interior and fore and aft doors. Front door is 4 ft. 1 in. high and 2 ft. 1 in. wide, while rear door is 4 ft. 7 ins. high and 3 ft. 11 ins. wide. Interior head room is 6 ft. and width is 6 ft. 5 ins. Cabin is 32 ft. 9 ins. long. Fuel capacity is 825 gals.

Chicago, representing Dassault for U. S. sales of the new propjet, last month released new details and the price of the scaled-up production model, the Communaute A1. It is powered by two Turbomeca Bastan turboprop engines of 1,000 equivalent horsepower each and rated at 940 shaft horsepower each for take off and 850 shaft horsepower each for maximum continuous operation. With crew of two, it carries 8 passengers in a cabin 32 ft. 9 ins. long and 6 ft. 5 ins. wide with head room of 6 ft. Pressurization gives an 8,000-ft. cabin pressure at a cruising altitude of 20,000 ft., at which the Communaute A1 will cruise at 300 mph. on maximum continuous power. With a fuel of 850 gals., it will offer a cruising range of 2,000 miles at 20,000 ft., carrying crew of two and four passengers and based on fuel reserve based on a 15-knot headwind, 5% of fuel consumption and including take-off, climb, cruise, descent, balked landing, climb to 3,500 ft., 30 mins. of holding at 3,500 ft., and descent and landing.

Other details are listed in the accompanying table.

"Price of the Communaute A1 is $456,000 equipped and delivered on the ramp at Bordeaux," Payton told FLIGHT MAGAZINE. "This includes standard 8-place executive interior, Collins radio package, full de-icing equipment and many other items — a complete, ready-to-go airplane."

The Collins radio package, he said, includes a 17L7 transmitter, 51X2 receiver, 17L8 standby transmitter, 51X2 omni, 51V3 glideslope and 51Z2 marker beacon and other standard electronics include a French compass system with repeater and 2-station interphone.

Communaute A1

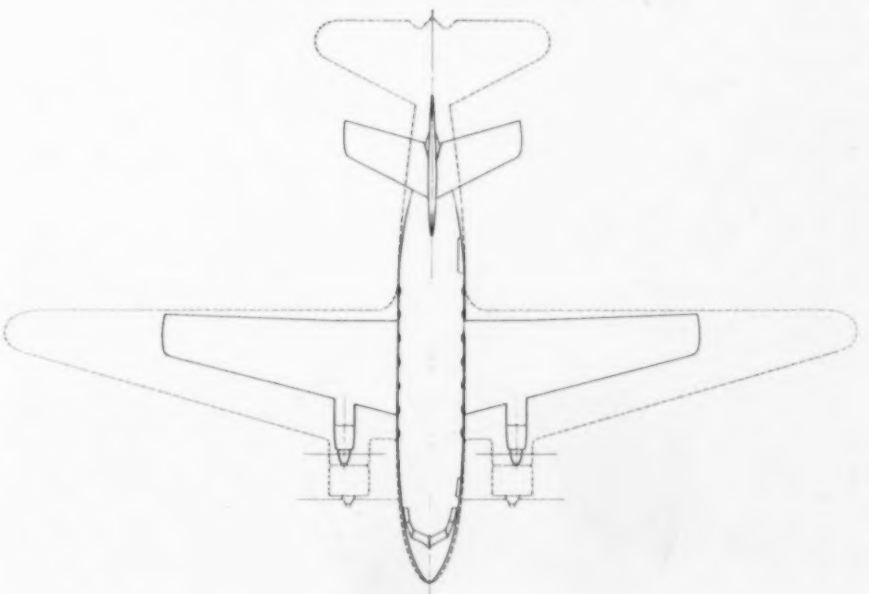
Factory Data

Powered by two 1,000-equiv.-hp. Turbomeca Bastan single-shaft turboprop engines with Rotier 3-blade propellers. Shaft horsepower ratings at 33,500-rpm. constant engine speed include 940 shp. for take off and 850 shp. for maximum continuous. Water injection for extra power.

Price, equipped (at Bordeaux)	**$456,000**
No. Seats	**10**
Cabin Pressure Alt., ft.	**8,000 at 20,000**
Gross Weight, lbs.	**16,500**
Operating Empty Wt., lbs.	**10,000**
Useful Load, lbs.	**6,500**
Useful Pct. of Gr. Wt., %	**39.9**
Fuel Capacity, gals.	**850**
Cruising Spd., max. cont. pow. @ 20,000 ft., mph.	**300**
Range, with 2 crew, 4 psgrs., mi.	**2,000**
Rate of Climb, fpm.	**2,400**
SE Rate of Climb, fpm.	**570**
Service Ceiling, ft.	**33,000**
SE Service Ceiling, ft.	**13,000**
Take-off Dist., ft.	**1,640**
Take-off Dist. to 35 ft., with 1 prop feathered, ft.	**3,000**
Landing Roll, ft.	**985**
Wing Loading, lbs. per sq. ft.	**35.8**
Power Loading, lbs. per hp.	**8.25**
Span, ft.	**60.6**
Length, ft.	**55.7**
Height, ft.	**22.1**
Cabin Dimensions—	
Length, ft.-ins.	**32-9**
Head Room, ft.	**6**
Width, ft.-ins.	**6-5**
Volume, cu. ft.	**1,060**

NOTES: Price includes standard 8-place executive interior, Collins radio package (17L7 transmitter, 51X2 receiver, 17L8 standby transmitter, 51X2 omni, 51V3 glideslope receiver and 51Z2 marker beacon receiver), Goodrich de-icing boot system and complete dual flight instrumentation.

Sketch shows how Communaute A1 compares in dimensions with DC-3, with about same cabin width but shorter length and wingspan.



Shinn 2150-A has fixed tricycle gear, 30-ft. span, 21.2-ft. length and 7-ft. height. The tandem-seater is powered by a 150-hp. Lycoming engine.

Two-Place Shinn In Production

FORMERLY known as the Morrisey 2150, the high-performance 2-place-tandem Shinn 2150-A has been placed into production by Shinn Engineering Co., 320 Dyer Road, Santa Ana, California. It is powered by a 150-hp. Lycoming, has a 692-lb. useful load at a gross weight of 1,817 lbs., and has fixed tricycle gear with hydraulic brakes and steerable nosewheel.

With 135-mph. cruising speed and 525-mile range, the 2-place Shinn is good for travel as well as for training. It climbs 1,450 fpm. at sea level and has 22,000-ft. service ceiling. Canopy has tinted glass.

Priced at $8,950, the Shinn cruises at 135 mph. and has a 525-mile range on 35 gals. of fuel. It will take off and land within 450 ft., climbs from sea level at 1,450 ft. per min., and has a 22,000-ft. service ceiling. Standard equipment includes metal prop and spinner, dual controls with toe brakes front and rear, soundproofing, air-foam cushions, tinted glass, starter, generator and battery, navigation lights and other features.

Developed, licensed and originally produced by Bill Morrisey, former chief test pilot for Douglas Aircraft at Long Beach, the 2150-A has travel and industrial usefulness because of its high performance.

Shinn 2150-A

Factory Data

Powered by 150-hp. Lycoming O-320-A2B	
Price	$8,950
No. Seats	2
Gross Wt., lbs.	1,817
Empty Wt., lbs.	1,125
Useful Load, lbs.	692
Useful Pct. of Gr. Wt., %	38
Fuel Cap., gals.	35
Top Speed, mph.	148
Stall Spd., mph.	52
Cruise Spd., mph.	135
Range, miles	525
Rate of Climb, fpm.	1,450
Svc. Ceiling, ft.	22,000
Take-off Dist., ft.	440
Landing Dist., ft.	450
Wing Loading, lbs. sq. ft.	12.5
Pow. Loading, lbs. hp.	12.1
Span, ft.	30
Length, ft.	21.2
Height, ft.	7
Fixed Gear Tread, ft.-ins.	6-10
Bag. Cap., lbs.	50

UNPARALLELED STABILITY . . .

The Aero Commander is designed to work for the pilot. Superior stability is the fundamental function of Aero Commander's high wing, high empennage design. The airfoil contour of the speed-line nacelles minimizes airflow separation. The high tail surfaces move smoothly through undisturbed air. Result: superior airworthiness, maximum stability at all speeds. This amazing 'hands-off' stability is just one of the reasons why the pilot flies so effortlessly in the new Aero Commander.

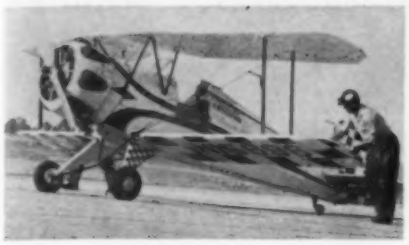
Write for your copy of the new Aero Commander brochure which describes in detail models 500A, 500B, 560F and 680F.

AERO **COMMANDER** *offers the best combination of features essential to business flying*

AERO COMMANDER, INC, Bethany, Oklahoma, *subsidiary of Rockwell-Standard* R *Corporation*

Contact! Bevo, Jr. swings the prop as the Buecher fires up with a roar.

Flying inverted a few feet off the ground, Bevo is photographed above just as the Buecher snags a ribbon stretched between two poles. At right, the Buecher gets a polish before the show.



Bevo Howard's Buecher Jungmeister

Upside-Down Artist

By J. O. PAINE

THE air show crowd shielded their eyes from the sun at the far end of the runway. A red and white biplane, flying upside down, streaked toward the concrete strip. Bevo Howard, winner of six national and international aerobatic championships, eased his little Buecher Jungmeister toward the ground until the rudder was less than 18 feet from the concrete. He was aiming at a ribbon stretched between two bamboo poles 25 feet apart. The Jungmeister was dead on target. As it passed between the tips of the poles, the airplane's tail snatched up the ribbon. Still flying upside down, Howard approached another runway. A snappy rollout set the Jungmeister right side up and the clipped-wing ship snuggled to the ground.

At 46, Beverly E. Howard is recognized as the country's top aerobatic pilot. In his gaudily-painted Jungmeister he has performed his inverted pickup before millions and still is going strong.

Appearing with Howard at the show were the "Thunderbirds," the Air Force's top jet demonstration team. When Howard had completed his 15 minutes of 35 maneuvers in the biplane of 1936 vintage, one of the Thunderbird pilots commented to a newsman, "We turn green with envy every time we see that man fly."

Howard is not the originator of the inverted pickup. "Squeak" Burnet, now retired and living in Virginia, did it in the 1930's. But it has become Howard's trademark. In April, 1950, he represented the United States in an aerial show flown by aerobatic pilots from eight countries. The show was given at Villacoublay Airdrome near Paris. Howard performed his inverted pickup that day before 300,000 Frenchmen. Howard remembers this as the largest audience he has performed his precision aerobatics before.

Roll into inverted position begins immediately after take-off.
—(J. O. Paine Photos.)

For 20 years Bevo has worn the same crepe-soled shoes — they help give him a better "feel" of the controls during his performance.

An audience he never will forget — one half that size — was at the Birmingham National Air Carnival in 1939. He was flying a 37-hp. Piper J-2 Cub straight up, 700 feet from the ground. The airplane was coming up the back side of an outside loop, a maneuver that strains every bolt and rivet, when the engine quit. The Cub started sliding backward in a tailslide. With the engine dead and no forward momentum, Howard had no control over the ship. He rode the Piper 350 feet toward the ground. The airplane was within the length of a football field to cracking up when it flipped on its back, completed a loop and glided to a landing. The stress of flying backwards had crushed the trailing edges of the wings and broken two of the four wing struts. A faulty inverted gas system was the cause of the engine failure.

In 27 years of aerobatic flying, close shaves like this have been few. Howard is skilled in performing aerobatics in a safe manner and has taken every precaution to avoid accidents. Since his foot slipped from the rudder while flying upside down 50 feet from the ground at Orangeburg, S. C., in 1943, ht has had straps built onto the rudder pedals. Howard wears a pair of old crepe sole shoes when he flies. "They fit my feet and I can feel through them," he explained. A double safety belt system makes him feel as safe as a baby in his crib and relieves his mind to concentrate on flying. Why two belts? He has had one of the safety belts to break during an exhibition. The other brought him safely through the act.

The Buecher Jungmeister is equipped with a "limp dog" gas system that enables the ship to fly upside down as easily as the other way. A flexible line is used with a weight that keeps

(Continued on page 56)

NOW! NARCO BRINGS YOU THE 3

NEW

narco MARK 7

360 CHANNEL VHF TRANSMITTER/RECEIVER
118.00—135.95 mc with 50 kc spacing

Here at last is a lightweight, compact, low cost, all-channel VHF transceiver that can be added to any existing installation to provide full communications capability over the complete and entire range of frequencies now in use or contemplated in the future. Covers all frequencies up to 135.95 mc and has 50 kc spacing. Fastest, simplest operation—one frequency setting automatically sets transmitter and crystal-controlled receiver to proper simplex frequency. Thoroughly tested, beautifully engineered, the Narco Mark 7 is exactly the unit you've been waiting for to bring your airplane up to full communications capability.

Compact, Lightweight!

Transmitter/receiver unit measures 3⅛" by 3 1/16" by 12⅜" deep. Control head fits in standard 3" instrument cut-out. With remotely installed power supply weighs only 10.5 pounds.

$1195

NEW

narco MARK 10 COMBINATION 360 CHANNEL

VHF Transceiver (118.00—135.95 mc with 50 kc spacing)

Plus **190 channel COMM/NAV receiver (108.0—126.9 mc)**

Here's the perfect *basic* COMM/NAV package providing the full 360 channel communications capability of the Mark 7 (118.00—135.95 mc) plus a separate VHF receiver providing crystal-controlled tuning to any VOR, ILS localizer, or voice facility up to 126.9 mc. Add the Narco CS-3A VOR/LOC indicator or CS-5 cross pointer and you have the most up-to-date, crystal-controlled Omni-navigation system possible, plus separate all-channel communications.

Typical Narco ingenuity gives you this remarkably engineered, perfectly designed combination unit with minimum weight and space and at a practical Narco price. Panel-mounted unit is standard "Narco Mark-size", 6⅛" wide by 3 1/16" high, for neat, simple installation in combination with the Narco ADF, Mark 5 or Mark 6. Complete with remotely installed power supply weighs only 12.5 pounds.

$1695

Go All The Way With Narco

ONLY narco OFFERS BUSINESS AVIATION A COMPLETE LINE

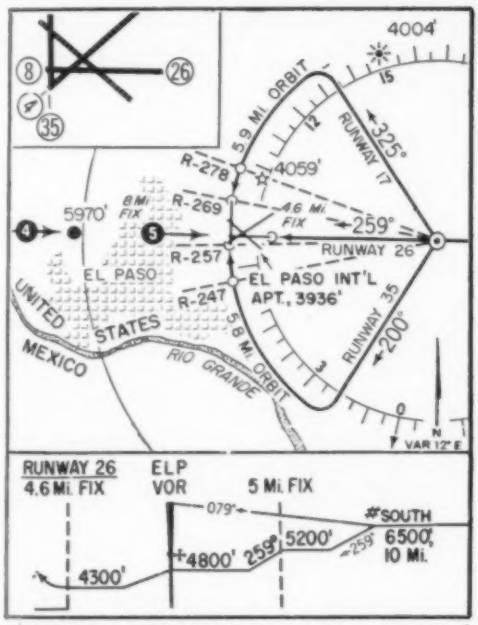
MOST WANTED COMM AND NAV UNITS FOR BUSINESS AIRCRAFT

NEW

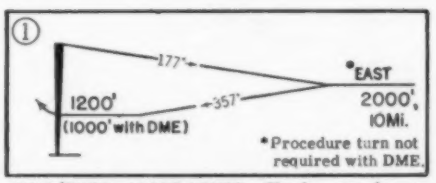
narco UDI-2 DME
DISTANCE MEASURING EQUIPMENT

THE MOST USEFUL NEW NAVIGATION SERVICE SINCE THE INTRODUCTION OF OMNI!

"42 MILES FROM THE OMNI!" Anytime, anywhere, on or off the airways, you can know your precise distance from a Vortac station with the Narco UDI-2 distance measuring equipment. With DME service being implemented over the entire Federal Airways System, Narco's new, exclusive, lightweight DME is the most useful new Navaid offered in a decade. Just read off the distance on the dial of your Narco DME, any distance up to 100 miles! Useful so many ways! You can quickly determine ground speed. Simplifies holding at an intersection. Expedites approaches by eliminating "high-cone" and other time-consuming procedures, permits new, more flexible instrument approach procedures to different runways or secondary airports, as these examples show.



DME ORBITAL APPROACHES. Any airport near a VOR/DME can have an "ILS Approach". With DME you fly a circle whose radius is the distance from the VOR to the runway. "Outer" and "middle" markers are determined by radials from Omni as this new DME approach to El Paso indicates.



DME/TVOR APPROACHES. Check your latest approach plates and note increased reference to DME and lower minimums with DME, such as TVOR approach to Rochester, N.Y., shown above.

$2250

complete with range/power supply unit and antenna. Weighs only 14 pounds.

(Charts reproduced courtesy Jeppesen and Co.)

YOU CAN COUNT ON THE BEST FROM

narco

NATIONAL AERONAUTICAL CORPORATION • FORT WASHINGTON, PA.

LINE OF COMM/NAV EQUIPMENT FROM ADF TO DME

FIG. 1 — Intersection of pointers marks destination in first step for solution of navigation problem. Pilot dials distance and direction on Butler VAC (not shown), which in turn positions the horizontal (distance) and vertical (direction) pointers.

FIG. 2 — Symbolic aircraft on instrument face, actuated by compass synchro, shows pilot has turned toward destination. Pilot then uses knob at lower right to rotate the "picture" so that vertical (direction) pointer is centered and symbolic aircraft indicates wind drift (right).

FIG. 3 — Accurate steering is made possible by using vertical pointer as course indicator. Control on Butler VAC is used to change course width as desired for increased pointer sensitivity. Horizontal (distance) pointer will center as aircraft passes over destination.

Pinpoint Navigation With Butler VAC Computer

INSTALLED in a Beech Twin-Bonanza, a lightweight Butler Vector Analog Computer, developed by the Research Division of Butler Aviation Company of Chicago, is currently on tour demonstrating extraordinary precision in navigation. It enables a pilot, flying either IFR or VFR, to (1) fly a columnar or rectilinear course with no appreciable lateral displacement, (2) fly such a course on or off a Victor airway with equal ease, (3) proceed to any latitude and longitude and know his exact position at all times, (4) navigate directly to any given holding point and hold there with precision, (5) assist radar control by furnishing more exact information on his position, (6) make transitions to ILS approaches with extreme versatility and (7) navigate off airways with extreme precision.

E. Stuart Perkins, chief of research for Butler, demonstrated the Butler VAC to FLIGHT MAGAZINE, solving several precision navigation problems on a local flight while using only a single Vortac station as a reference. Its distance-direction signals were automatically converted by the Butler VAC into grid-type coordinates and presented to the pilot in a cross-pointer flight director instrument, the horizontal pointer representing distance and the vertical pointer representing direction.

How It Operates

Operation of the Butler VAC system is illustrated by progressive steps in the photos on this page, showing the flight director used by Perkins. The face of the 3-inch instrument is a disc controlled by a gyrosyn compass synchro and containing the figure of a symbolic aircraft, oriented for heading. This figure is made up of dots and the space between the dots is equal to 1/10th of the radius of the instrument face. The face of the instrument also represents an area of terrain. This area is determined by a sensitivity control, with which the pilot can vary the radius from 1 mile to 100 miles.

Figure 1 shows the problem as set up by the pilot with the Butler VAC. His aircraft is headed North, as shown by the symbolic figure. With the VAC's encoder, he has dialed into the system his destination's distance (Rho coordinate) and direction (Theta coordinate), with the horizontal or "x" pointer representing distance and the vertical or "y" pointer representing direction. The computer automatically positions the pointers so that their intersection becomes the point of his destination. The computer's course width control has been set for a scale of 100 miles, so that the face of the instrument in Figure 1 represents the destination to be 80 miles Northeast of the aircraft's position.

Figure 2 shows the pilot has now turned his aircraft to fly toward the intersection of the x-y pointers, which marks his destination. If there were no wind, he could go directly to this point merely by holding a Northeast heading. But so the Butler VAC can solve the vectors involved, the flight director instrument is designed so that the knob at its lower right corner can be turned to re-orient the x-y coordinates. It turns four things simultaneously — it turns (1) the card containing the arms which positioned the pointers, (2) the card containing the arm positoned by the Theta encoder, (3) the body of the compass synchro and (4) the peripheral azimuth scale of the instrument.

The pilot turns this knob until he solves the y-y direction component. This is solved when the vertical pointer crosses through the center of the instrument. The x-x axis now contains the weight of the problem, which is distance. Northeast (45 degrees) becomes the zero index of the azimuth and the y pointer represents a line of position to the destination, as shown in Figure 3.

Now the pilot changes the width of his course from 100 miles to 1 mile by setting the computer's course width knob. The null-balanced indicator remains in the center and the pilot steers to keep it there. Because of the increased sensitivity of the indicator, any 500-ft. lateral displacement will be quite apparent and before the pilot moves 500 ft. from the line, he will have corrected to compensate for drift. He does this by control response, identically to the manner of flying along a railroad track and the symbolic aircraft figure will align itself in a position indicating the drift compensation.

The weight carried by the horizontal pointer is a voltage equal to the distance to the destination. It carries no direction, hence it may be read on a DC voltmeter calibrated in miles. This voltage decreases to zero at a rate depending on the aircraft's ground speed and the rate can be read on a microammeter calibrated in knots or miles per hour of ground speed by reading the discharge rate of a capacitor carrying this voltage.

Upon arriving at the destination, both pointers will cross at the center of the instrument.

Why Accuracy Is Needed

It might appear that a pilot equipped with a DME and an omni can accomplish the same thing — at so many miles out from the station on a certain heading, he would appear to be exactly over an exact point on his navigation chart. But this is not true, says Perkins. The pilot would not be over a point at all but over an "approximate area" and the vagueness of this area increases with distance from the station. For example, Perkins says it can be demonstrated that this vagueness equals 7 miles of course width at a distance of 57 miles from the station — even if both the omni transmitter and the omni receiver are checked and found to have zero error. This vagueness comes not from the radio signals but is inherent in the use of polar coordinates or VOR radials for scanning a circular area — the spherical distortion is fully as great as that which we would obviously find if the lines of a television picture radiated from the center of the tube.

Explaining further, Perkins says: "The Butler Vector Analog Computer converts the radio signals into Cartesian coordinates by separating the voltage taken from the DME indicator into east-west and north-south components derived from the shaft position of the omni bearing indicator. This compounding gives us a point, instead of an area. This point is an intersection of x-y coordinates. When shown on a chart, they run east-west and north-south, rather than radially, and spherical distortion is thereby eliminated."

As for omni accuracy, Perkins says one of the reasons such a conversion has to be made is that an omni bearing indicator has more accuracy than we can read on a 3-inch dial. "To navigate accurately with it, or with an RMI, is like trying to time a race with the minute hand of a perfectly accurate clock," Perkins says. "An OBI error can be limited to only 6 minutes of arc, but the readability is only about 2 degrees."

(Continued on page 50)

Narco Million Dollar Round Table, for wholesalers, seated those shown above (clockwise from left): Pat Murphy of General Aircraft Supply; Gino Cantele, Air Associates-Chicago; Sid Anderson, Gasco-Oklahoma; Don Horn, Memphis; Rob Winick, Van Dusen-Minneapolis; Ray Hall, Van Dusen-Teterboro; Don Hamilton, Standard Products, Wichita, and Bob Fern, Norman Larsen Co., Van Nuys.

Narco Sales Leaders Honored

AT its 10th annual sales meeting last month, Narco announced its 365 "associate distributors" will henceforth be distributors and that "regional distributors" will now become regional wholesalers. Gil Quinby, vice president-sales, created two new sales department divisions, with Bill Heritage manager of distributor sales and Bert Rashkow manager of OEM sales.

Sales leaders were honored at the meeting. Air Associates at Chicago received the "top dog award" for largest total sales volume in 1960, accepted by Gino Cantele. Awards for top sales improvement went to Air Associates at Teterboro with 72% increase, followed by Van Dusen-Miami, up 50%; Standard Products at Wichita, up 30% and Van Dusen at Chicago, up 29%. Aviation Supply Co., Tampa, was added to the million-dollar round table for having sold over a million dollars worth of Narcos, with 2nd million dollar award going to General Aircraft Supply at Detroit, a 3rd million dollar award going to Air Associates at Chicago and the first 4-million-dollar award going to Van Dusen-Teterboro. First "outstanding salesman" award went to Pat Murphy of General Aircraft Supply at Detroit.

Narco Sales Chief Gil Quinby is shown presenting three awards. At right, Pat Murphy receives top salesman award. At left below, E. R. Hubshman accepts for Air Associates-Teterboro top sales gain award. At right below, Ray Hall accepts for Van Dusen award for topping $4 million in sales.

New fuel injection power gives the Beechcraft B95A Travel Air exciting new performance, including 180 pounds more useful load. It flies at speeds up to 210 mph. Range, with reserve, is over 1,150 miles.

Big main baggage compartment and extra baggage area in nose section give you nearly 50 cu. ft. of luggage space.

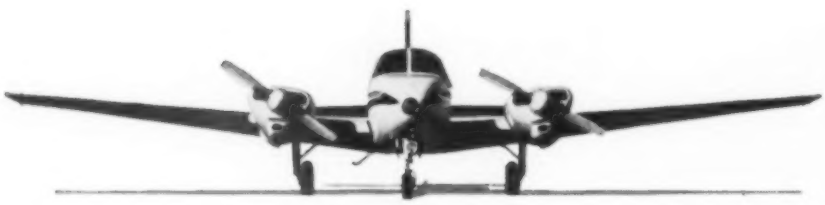
Plenty of room for 5 people to travel in relaxed comfort in the Travel Air's big super-soundproofed cabin. Big, soft anatomy-contoured seats have fully reclining backs. New larger rear windows provide greater than ever visibility.

Announcing The New Beechcraft Travel Air With Fuel Injection, 180 Pounds More Useful Load:

Now there are more reasons than ever for you to see and fly the Beechcraft Travel Air. Here is just a partial listing of what's new in the B95A Travel Air for 1961:

1. **NEW fuel injection system** on the Travel Air's two 180 hp Lycoming engines gives you easier starting at all temperatures, smoother running, more precise fuel metering and complete freedom from carburetor icing problems.
2. **NEW increased payload.** New 1,645 pound allowance for fuel, equipment, passengers and baggage lets the new Travel Air carry 180 pounds more useful load.
3. **NEW larger baggage compartment** in the nose. Big 3-suiter can be easily carried.
4. **NEW larger rear windows** provide nearly "around the clock" visibility.
5. **NEW larger air cushion flaps.** Solid stable feel in approach and landing.
6. **NEW accessory shelf** at rear of cabin for hats, purses, cameras or other personal items.

On top of all this, the Travel Air is still the roomiest, easiest-to-fly, easiest-on-gas twin that can come anywhere near its performance. Beechcraft distributors and dealers invite you to see and fly the new Travel Air yourself. Why not make a date now?



Write today for latest information on low-cost Beech leasing and financing plans. Address: Beech Acceptance Corp., Wichita 1, Kansas, U. S. A.

Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

When you command a Beechcraft Super G18, you command the airplane that's a favorite of pilots the world over for its ruggedness and reliability under all kinds of conditions. With its big 450 hp Pratt & Whitney engines, the Super G18 carries big loads at high speeds, goes into and out of even the smallest airports with ease and safety.

Roomy cockpit has space for dual instrumentation, dual nav-com equipment and panel-mounted radar scope.

Passengers feel at home immediately in the Super G18's spacious separate passenger cabin with wide center aisle and new Skywide panoramic windows. Food bar and private lavatory make long trips in the Super G18 a pleasure.

Beechcraft Super G18...Excitingly New for '61

Few airplanes in history have earned the kind of respect and affection that thousands of professional pilots have for the Beechcraft Super G18.

If you haven't made a close inspection of the new Super G18 lately, you owe it to yourself and your company to bring yourself up to date on the latest advancements in this remarkable business transport.

Beechcraft distributors and dealers have a standing invitation for you to see and fly it at your earliest convenience. Why not do it soon?

As you enter the cockpit, notice how much room you have to work. Check the visibility through the big wrap-around windshield. Adjust the chair to the exact position *you* prefer. Comfortable? Let's fly!

As you take the Super G18 upstairs, ask yourself whether any other airplane offers you so many of the advantages you want. Check them off: All-weather usefulness, with modern weather radar and a wide choice of factory-installed radio and navigation equipment . . . big load-carrying ability that lets the Super G18 carry up to 9 people . . . speeds up to 233 mph . . . fuel capacity to carry a full load of passengers and baggage over 1,000 miles . . . amazing short field capabilities . . . plus extremely low operating and maintenance costs.

See it, fly it, compare it—and we know you will be satisfied with nothing less than a Super G18.

Write today for latest information on low-cost Beech leasing and financing plans. Address: Beech Acceptance Corp., Wichita 1, Kansas, U. S. A.

Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

Map traces Max Conrad's record-shattering global flight, with distance of each hop shown. Use of 140-octane fuel at Wake and Guam caused delays for spark plug replacements. Longest delay was 18 hrs. 17 mins. on the ground in Brazil due to red tape confusion at unscheduled stop. Longest hop was 17 hrs. 19 mins. between Bombay and Nairobi. Flight started and ended at Miami.
—(Piper Aircraft Map.)

Around The World In 8 Days By Light Twin

A NEW round-the-world speed record was established February 27-March 8 by Max Conrad, world's foremost distance pilot, when he circled the globe for an officially-measured distance of 25,946.3 miles in 8 days, 18 hours and 36 minutes. Flying a Piper Aztec light twin, he made 13 stops, spending 50 hours 2 minutes on the ground and 160 hours and 34 minutes in flight. His over-all ground speed was 123.2 mph., including time on the ground. Counting only his time in the air, his speed averaged 161.3 mph. The flight started and finished at Miami.

The feat earned for Conrad three new records — (1) a world record for piston-powered airplanes regardless of size, (2) a world Class C-1-d record aircraft weighing between 3,858 and 6,613.9 lbs., and (3) a U. S. record for round-the-world speed. All three records had been held by the late Peter K. Gluckmann, the single-engine lightplane-flying San Francisco watchmaker, who flew a 23,456-mile global circuit in 29 days for an average speed of 33.4 mph. in 1959. Conrad eclipsed that record by more than 20 days.

As both records show, speed over such great distances and obstacles is not as impressive as aircraft dependability and airmanship. It is the modern lightplane's mechanical integrity which Conrad's record glorifies, along with Conrad's own remarkable physical stamina and distance-flying skill, more than mere speed itself. Usually alone in his distance records, Conrad this time carried a passenger as official observer for the National Aeronautic Association and the world governing body for aviation records, the Federation Aeronautique Internationale. The passenger was Dick Jennings, a radio newscaster.

W. T. Piper, manufacturer of Conrad's Aztec, is shown at left with Conrad and Jennings, (center). Conrad's Aztec (below) carried 432 gals. of fuel and grossed 6,160 lbs., 1,360 lbs. over normal gross. Even so, it took off from Miami in 2,500 ft. Equipment included Goodrich de-icing boots, Collins, ARC, Sunair and Piper Auto-Nav electronics and a Pan Avion survival kit. Aztec is powered by two 250-hp. Lycoming engines.
—(Piper Photos.)

BELLANCA *Performance*

THE TRUE MEASURE OF *Performance*

Cruise Speed . . . 203 m.p.h.

Stall Speed . . . . . 62 m.p.h.

Rate of Climb . . 1750 f.p.m.

Write for complete information on the 4-place Bellanca 260

DOWNER AIRCRAFT COMPANY

ALEXANDRIA, MINNESOTA

PERFORMANCE IS A TIME-TESTED TRADITION WITH BELLANCA

HERE'S THE SIGN OF THE FINEST SERVICE FOR YOUR PIPER AIRPLANE

Piper has established a world-wide network of Factory-Certified Service Centers to assure you of the finest service possible for your Piper airplane.
To earn the coveted designation, service organizations must meet rigid requirements, must be properly equipped and staffed by personnel who have attended the intensive service school conducted at the Piper plant.
Dozens of Piper Factory-Certified Service Centers have been established throughout the nation and around the world, and more are being designated to assure convenient and competent Piper service wherever you may wish to fly.

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CATLIN AVIATION CO.
Will Rogers Field
P. O. Box 2398
MUtual 5-6644
Oklahoma City, Oklahoma

CUMMINGS & GROVES AVIATION, INC.
Houston International Airport, Hangar No. 8
MIssion 4-5593 *and OLive* 4-4351
Houston, Texas

DELAWARE AVIATION CORPORATION
North Philadelphia Airport
HObart 4-1600, *TWX PH* 520
Philadelphia 36, Pennsylvania

EXECUTIVE AIRMOTIVE, INCORPORATED
Stewart Air Park
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GArfield 8-3581, *GArfield* 2-7277
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NEW PANEL. Full instrumentation right in front of the pilot, radios grouped conveniently near center, (room for complete 2½ system plus ADF), plenty of room for extra instruments, plus map compartment.

GO FAST! GO FIRST CLASS!

GO COMANCHE for '61

You'll be pleasantly surprised when you fly the new, more-beautiful-than-ever 1961 Piper Comanche—with either 180 or 250 Lycoming horsepower. You'll find new flight-ease and comfort features everywhere for you and your passengers. New panel, new toe brakes, new automatic flight, new radio navigation packages and systems, new cabin heating and cooling *plus* the wonderful, just-right handling characteristics which set the Comanche apart as a plane the pros really love to fly . . . a plane beginners feel at home in.

AND NOW! 1600 MILE RANGE FOR COMANCHE 250

With approved gross up 100 pounds to 2900 pounds, the 250 hp Comanche now has 90-gallon fuel capacity as standard in the Super Custom and Auto-Flite models—good for over 1600 miles at economy cruise. There's long range, too, with amazing economy in the 180 hp Comanche—over 1100 miles with 60-gallon capacity.

MORE THAN EVER YOUR GREATEST VALUE

With the biggest useful load . . . roomiest cabin . . . with superior aerodynamic efficiency *plus stamina* proven by 3 world non-stop distance records . . . the Comanche is easily and surely your best value in the high performance, single-engine field. See for yourself at your nearest Piper dealer's or write for 1961 Comanche brochure, Dept. F-4.

OFFERED WITH THESE *Exclusive* **FLIGHT-EASE FEATURES**

PIPER AUTOCONTROL. Standard on AutoFlite Comanche. Holds any course precisely with heading lock, makes turns automatically, too. All-transistorized.

ALTIMATIC PILOT. Turns automatically to any pre-set heading; climbs to, descends to, then holds any pre-set altitude precisely. Ultimate in restful automatic flight. (Optional)

PIPER AUTO NAV. New Piper-perfected radio navaid provides LF and standard broadcast reception plus automatic homing at surprisingly low cost. (Optional)

PIPER *Comanche*

PIPER *AIRCRAFT CORPORATION • LOCK HAVEN, PA.*

ATTRACTIVE LEASE/FINANCE PLANS

No Complaint or Violation Charged in Anti-Trust Investigation of Eight Lightplane Manufacturers

ALTHOUGH no complaint or violation was implied or alleged, a Federal anti-trust investigation of the lightplane industry by grand jury has been launched, with eight manufacturers already subpoenaed to produce records of their operations since 1946 covering the manufacture, distribution and sales of business and utility aircraft. The records went to a Federal grand jury convened in Wichita, Kansas, on April 4.

Subpoenas were issued to aircraft manufacturers listed as Beech, Cessna, Piper, Aero Commander, Mooney, Call Aircraft, Taylorcraft and Meyers Aircraft. It appeared likely that other manufacturers may also be subpoenaed, along with individuals, as the investigation progresses.

As is the case with grand jury investigations, which are secret, no detailed explanation of the study was issued with the subpoenas. The subpoenas were handled through the Chicago office of the Midwest Anti-Trust Division of the U. S. Department of Justice.

FLIGHT MAGAZINE queried Bertram M. Long, assistant chief of the Midwest Anti-Trust Division in Chicago, about the subpoenas. "No complaint or violation is implied or alleged by the subpoenas," Long said. When asked the nature of the case, Long explained that "about all I can say is that this is a grand jury investigation to determine if there is violation of Federal anti-trust laws."

There is widespread interest in the investigation because the subpoenaed manufacturers have hundreds of distributors and dealers. About the only information available was a statement by Frank E. Hedrick, executive vice president of Beech Aircraft Corp. Hedrick declared Beech had been directed to furnish the grand jury "corporate records of all distribution and sales activities, records of all purchases from our suppliers and copies of all corporate and financial records" since 1946. His statement follows:

"Since early February, our company has been giving priority to the accumulation of requested informational materials covering the past 15 years of operations of the manufacture, distribution and sales of the business aircraft part of Beech Aircraft's total business.

"We believe that this extensive research of our operations will provide proper and valid evidence of Beechcraft's successful endeavors in building a world-wide marketing organization whose Beechcraft sales have increased approximately 750 percent in the past decade.

"We believe also that our records will clearly indicate our own freely-competitive position and policies as part of an industry that has grown approximately eight times larger in the past decade.

"As one company, of about a dozen U. S. manufacturers engaged in general aviation, Beech Aircraft was directed by the Federal Justice Department to furnish corporate records of all distribution and sales activities, records of all purchases from our suppliers, and copies of all corporate and financial records, covering the period 1946 to date; and that such records be delivered to the Federal grand jury to be convened in Wichita on April 4, 1961."

NEW LOCKHEED C-141 FAN-JET TRANSPORT FOR U. S. AIR FORCE, winner of design competition for an order of more than 100 transports, is pictured as an artist's conception. The high-wing Lockheed is about twice the size of the C-130 Hercules and will be powered by four Pratt & Whitney JT3D-8A turbofan engines delivering over 20,000 lbs. of thrust each. It will carry 60,000 lbs. of cargo 3,400 miles or a 20,000-lb. cargo 6,325 miles from California to Japan.

—(Lockheed Drawing.)

SPAN FLOW AIRCRAFT DUSTING SYSTEM uses supplementary "wing" which spreads dust uniformly downward. Agricultural Aviation Engineering Co., 858 Scott St., Santa Clara, Calif., manufactures the system.

Airmen's Calendar

April 22-23—14th Annual Air Medics Association Meeting, Jack Tar Hotel, Galveston, Tex.

April 22-25—34h Annual Business Meeting, American Association of Airport Executives, Broadmoor Hotel, Colorado Springs.

April 27-29—1961 National Intercollegiate Flying Association's 13th Annual Air Meet and Conference, Texas A. & M. College, College Station, Texas.

April 30-May 6—1961 Annual Aviation/Space Writers Association Annual Meeting and News Conference, Commodore Hotel, New York City.

May 3-5—17th Annual National Forum, American Helicopter Society, Sheraton Park Hotel, Washington, D. C.

May 8-12—Annual Meeting, Airport Operators Council, Carillon Hotel, Miami Beach.

May 12-14—2nd Annual Mid-America Air Fair, Municipal Airport, Wichita, Kas.

May 15-18—20th National Conference of the Society of Aeronautical Weight Engineers, Sheraton Hotel, Akron, Ohio.

May 26-June 4—24th International Air Show, LeBourget Airfield, Paris, France.

May 27—11th All Women's International Air Race, Lehigh Acres, Florida, to Nassau, BWI. For details, write Mary Barrer.

June 2-3—12th National Maintenance & Operations Meeting, Municipal Airport, Reading, Pa.

June 13-15—37th Aviation Distributors and Manufacturers Association Meeting, Dennis Hotel, Atlantic City, New Jersey.

June 18—Dawn Patrol, Haines Airport, Three Rivers, Michigan.

June 26-27—1st Annual Flying Osteopathic Physicians Association Meeting, Broadmoor Hotel, Colorado Springs.

July 8-12—15th Annual AWTAR Powder Puff Derby, San Diego to Atlantic City, open to all licensed women pilots with entries closing June 15.

July 25-Aug. 10—International Trade Fair and Aviation Exposition, McCormick Place Exposition Center, Chicago, Ill.

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Will Rogers Field
Oklahoma City, Oklahoma

ALAMO AVIATION, INC.
Municipal Airport
San Antonio, Texas

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  Teterboro, New Jersey
- Logan International Airport
  East Boston, Massachusetts
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  Philadelphia, Pennsylvania
- New Castle County Airport
  Wilmington, Delaware

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Houston International Airport
Houston, Texas — MI 4-5595

CURREY SANDERS AIRCRAFT CO., INC.
Downtown Municipal Airport
Shreveport, Louisiana

CUTTER-CARR FLYING SERVICE, INC.
West Mesa Airport
Albuquerque, New Mexico

ELLIOTT FLYING SERVICE
- Municipal Airport, Des Moines, Iowa
- Municipal Airport, Davenport, Iowa

GRAY AIRCRAFT SVC. CO., INC.
D. A. Cody, Service Manager
Love Field, Dallas, Texas

HARTZOG AVIATION
Greater Rockford Airport
Rockford, Illinois

THE NORMAN LARSON CO.
PLANESERVCE, INC. (Service Division)
Van Nuys Airport, Van Nuys, Calif.
(Los Angeles Area)

PIEDMONT AVIATION, INC.
Smith Reynolds Airport
Winston-Salem, North Carolina

ROSCOE TURNER AERONAUTICAL CORP.
Municipal Airport
Indianapolis, Indiana

TEXAS AVIATION CORPORATION
G. K. Roberts, Pounds Field
Tyler, Texas

TOPEKA AIRCRAFT SALES & SERVICE
Municipal Airport
Topeka, Kansas

TRADEWIND AIRPORT CORP.
Tradewind Airport
Amarillo, Texas

TULSAIR DISTRIBUTORS, INC.
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Tulsa, Oklahoma

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New Lightweight King Comm-Nav-ILS KX-110

A NEW King Radio development is a compact three-in-one communications-navigation-ILS panel-mounted unit known as the King KX-110. The KX-110 weighs only 9 lbs., including transistorized power supply, mounts in a small panel space measuring 6.5 by 5.25 by 8 ins., and is available for both 14 and 28 volts. Price, including 14-volt power supply unit, is $1,495. Included in the unit is (1) a 90-channel crystal-controlled transceiver (118.0 to 126.9 mc) with 10-watt transmitter and receiver to match, (2) a separately-tuned crystal-controlled navigation receiver covering all omni and localizer channels and (3) a new ½-lb. 10-channel glideslope receiver. Each glideslope frequency is paired with its corresponding localizer frequency so that tuning the localizer automatically tunes the glideslope.

To go with it, King has a new KI-210 omni-localizer-glideslope converter indicator, which switches automatically to localizer mode when a useable signal is received and the glideslope pointer is activated when a glideslope signal is received. The 3.25-in. indicator weighs 2.5 lbs. and costs $995. King also offers the navigation section of the KX-110 as a separate Nav-ILS package, known as the KN-50 and containing all omni and localizer channels plus the new half-pound, 10-channel glideslope receiver. It weighs 4.75 lbs. including separate transistorized 14 or 28-volt power supply, and is priced at $825 (14-volt). The units are pictured above.

The destination reached by centering the pointers can be one of several waypoints selected as desired. In this demonstration, Perkins uses the VAC to arrive at such waypoints as an outlying airport or other desired let-down point, a holding point, a runway threshold, and as a simulated "station" from which to proceed to other points. At all times, only a single Vortac station is used as a source of radio information. To orbit a waypoint, for example, the intersection of the pointers is kept under a wing tip of the symbolic aircraft figure in the pictorial instrument while flying a tight circle.

This brings out an interesting example of the Butler VAC's accuracy — because the intersection of the pointers is a dimensionless point, the pilot can inform a radar controller exactly where his orbit is pinpointed, whereas, without this accuracy, the controller's radar pip indicates the aircraft might have a two-mile wingspan.

A runway may be selected by setting the peripheral scale first to the downwind heading and then to the runway heading, and an approach made using the instrument. When the vertical pointer and the symbolic aircraft are aligned in the center of the instrument, the pilot will see the runway directly ahead.

Or the Butler VAC can be used to "erect" an artificial station at the antenna site of a VOR station 100 miles away. To do this, Perkins selects a road which coincides with a radial to this station. Then, with this radial set into the VOR indicator and into the VAC indicaor, a comparison is made of the two by flying at right angles to the radial using the road as a fix. A 10-mile excursion is not sufficient to move the pointer on the VOR indicator, but 1/50th of this or only 1,000 ft. will suffice to move the VAC indicator. Thus the Butler VAC can be used to "erect" an infinite number of artificial stations in an area where one station exists, every one of which is up to 50 times more ideally suited for navigational purposes than would be its physical counterpart, without use of the Butler VAC.

Equipment in Perkins' Twin-Bonanza which is linked with the Butler Vector Analog Computer and indicator system is a Tacan receiver, omni receiver and Gyrosyn compass. The computer itself is a small black box containing no tubes or transistors — all it has is a couple of simple null-balancing devices which are about the equivalent of Wheatstone bridges. The face of this box is a "waypoint selector," consisting of three dials — one marked Theta for direction, the second marked Rho for distance and the third marked Orbit Diameter for course width. The Rho and Theta dials are encoders, with which the pilot sets the distance and direction of his destination or waypoint. With the Orbit Diameter dial he varies the sensitivity of the pointers of the pictorial indicator or flight director instrument — it actually specifies the voltage needed to move the intersection of the pointers from the center of the instrument to the edge and has the effect of changing the width of the course from 1 to 5 to 50 to 100 miles, as needed for accuracy.

Perkins said a production model Butler "black box" (he is using a laboratory model in the Twin-Bonanza) would be contained in a 3-inch instrument on the aircraft instrument panel. Instead of dials, it would have small knobs and digital read-out for waypoint selection. He said the Butler VAC itself would weigh about 4 lbs.

Butler Aviation Research is not interested in manufacturing and marketing the black box system, Perkins said. Instead, Butler will make it available to reputable manufacturers who are already in the navcom business. Because his efforts have been confined only to research, Perkins doesn't know what the black box would cost the customer, once it is in production and has been marketed, but he believes it would cost the customer less than $2,000.

Any manufacturer interested in the project can communicate with E. Stuart Perkins, chief of research, Butler Aviation Research, a division of the Butler Company, Oak Brook, Hinsdale, Ill.

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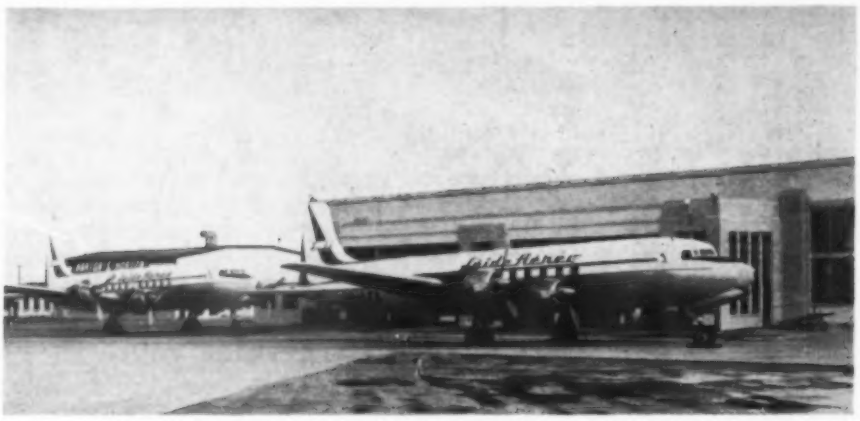

CUSTOM INTERIORS FOR AIRLINES AS WELL AS CORPORATE AIRCRAFT are being installed by Horton & Horton of Ft. Worth, this picture showing two of five DC-6's sent to Horton by a Brazilian airline, Loide Aereo Nacional, which is converting to super luxurious cabins as a switch from crowded coach interiors. New interiors include a rear lounge for private, in-flight business conferences. At right, Mrs. Dorothe Anne Horton of the firm is with Col. Marcilio Gibson Jaques, president, and Col. Theobaldo Kopp, assistant technical director for Loide Aereo.

New Business In The Hangar

Henry L. Seale Buys Dallas Aero Service

Henry L. Seale Aviation Supply Company last month purchased the extensive Dallas Aero Service properties, operations and facilities at Love Field in Dallas from Major W. F. (Bill) Long, pioneer aviation operator and financier. Henry L. Seale, who specializes in large-scale aircraft engine sales, said he will operate Dallas Aero Service on an "as is" basis and will launch a modernization program to improve the facilities and provide better service for an enlarged clientele. Dallas Aero Service specializes in complete maintenance, overhaul and modification service for all aircraft, including airline and corporate transports. Seale also announced his firm will now perform all of its own engine work, including its Pratt & Whitney R-985 manufacturing program for Beech Aircraft Corp.

PROPOSED CHANGES IN FAA MAINTENANCE STANDARD RULES include new "Maintenance Standard Orders" (MSO) which would gradually replace the presently-used detailed technical maintenance guidance material now contained in Civil Aeronautics Manuals as policies and

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interpretations of the Civil Air Regulations. The FAA believes the MSO should not prescribe detailed methods but should be aimed at a "minimum end quality" of maintenance. Under the proposed system, detailed methods will not be incorporated in an MSO except for purposes of clarity or explanation or in definition of a standard and where a proposed alternative to these detailed methods will produce the equivalent result, it will be acceptable to FAA. The MSO will pertain solely to maintenance. Later, alterations to civil aircraft may be the subject of separate regulatory proposals. Comments before April 20 were solicited and should go to the Docket Section, FAA, 1711 New York Avenue NW, Washington 25, D. C.

REMMERT-WERNER, INC., Lambert Field, St. Louis, delivered a deluxe Grumman Goose to Hudson's Bay Company, Art Atkinson, pilot. . . . Ralph Piper's Monsanto Chemical Convair had a Skydrol fire-resistant hydraulic system installed. . . . Landing gear and nacelle replacement and an engine change were performed on a Zantop Air Transport C-46. . . . At Pompano Beach, R-W had Lloyd Bauer's Michigan Wisconsin Pipeline DC-3 for control cable replacement, wing removal and inspection and landing gear overhaul, and Shelby Maxwell's Burlington Mills DC-3 was stripped and repainted.

EXECUTIVE AIRCRAFT SERVICE, Redbird Airport, Dallas, performed 8,000-hr. overhaul and interior modifications on Steve Germick's Texaco DC-3 from Houston. . . . Ken Hunter brought in Kerr-McGee Oil's Douglas A-26 for airframe repairs and painting. . . . Repairs were performed on Ernie McGill's Bankers Life DC-3 from Lincoln, Nebraska, and Larry Gustafason's Ambassador Oil's DC-3 from Ft. Worth.

READING AVIATION SERVICE, Municipal Airport, Reading, Pa., performed double engine change on Vern Pink's Sun Oil DC-3. . . . Camera port was installed in Alberto Woilkopf's Aero Transportes (Argentina) Model 500B Aero Commander. . . . Also in for work were Otto Pobanz's Federated Department Stores' Martin 404, a Southeast Airlines DC-3, an Army L-26A Aero Commander, the Koppers Company Aero Commander, Overly Manufacturing's Beech 18, Bill Austin's Lukens Steel Aero Commander and Jake Arner's Price Battery Beech 18.

SOUTHWEST AIRMOTIVE, Love Field, Dallas, has a 3-year Army contract to overhaul Franklin helicopter engines, including 135 engines within 4 months and a maximum of 300 engines during the first 12 months.

JET-CLEAN GASOLINE for lightplanes is available from a new two-stage water separator/filter attached to any standard dispensing pump. Filter is marketed by the Warner Lewis Co., division of Fram Corp., Tulsa. Pretty girl shows how unit is attached to pump.

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EIGHT PULLMAN-LIKE BERTHS installed by AiResearch Aviation Service have converted a Reynolds Metals Company DC-6B into a flying hotel. Shown open (left) and folded up (right), they supplement berthable divans and seats to sleep 16 persons. The Reynolds DC-6B's fuel capacity was also increased to carry 4,736 gals. of fuel.

MOHAWK AIRLINES MAINTENANCE HANGAR, Oneida County Airport, Utica, N. Y., had IBM's DC-3 for wing pull, engine change and other work. It was brought in by Wayne Palmer, Ed Sown and Carl Anderson. . . . Bill Horan's Great Lakes Carbon Convair 440 had main landing gear struts repacked. . . . Jerry La Monte's Allied Industries Convair 340 was relicensed. . . . Also in the hangar for work were Jack Fles' Wayfarer Ketch Convair 240, Inland Container's Convair 240, Frank La Vigna's Arthur Godfrey Convair 340, Eastern Gas & Fuel's Convair 240 and Cummins Engine's Convair 440.

PACIFIC AIRMOTIVE, Burbank, delivered Bechtal Corporation's new Grumman Gulfstream after installing custom interior, custom radar, radio and electronics, painting and other features. Chief Pilot is A. K. Roden. . . . George Fleming's Sears-Roebuck DC-3 was in for Pan Am carburetor air scoop kit and partial painting. . . . Herb Green's Gene Autry Lodestar received hydraulic, engine and prop work. . . . S. Miller's Bendix Radio DC-4 was prepared for overseas flight. . . . Jack De Wolfe's E. F. MacDonald Martin 404 had engine fire damage repaired. . . . Instrument panel modification was performed on Ciro Martinez' Motores de Mexicali Twin-Bonanza. . . . Texas Eastern Transmission's Learstar and American Cyanamide's Lodestar received deicer boot replacement while undergoing tank seal work by Aircraft Tank Service. . . . Imperial Oil's and Mellon National Bank's new Grumman Gulfstreams are in for custom finishing and equipping. . . . PAC's Pac-Aero plant at Santa Monica delivered U. S. Steel's fourth Grumman Gulfstream to Al Jones after custom finishing. . . . Col. E. W. Estelle took delivery of his new Esso Tankers Convair conversion with Allison propjet engines. . . . Harold Sumi's new Johnson Wax Grumman Gulfstream was delivered. . . . Pac-Aero has received the first of five

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FAA Convairs for Allison propjet conversion. . . . Bill Moore's Industrial Indemnity Lodestar was delivered after modification for 21,500-lb. gross weight with JATO installation and radio work. . . . Rod Christensen's Stauffer Chemical Lodestar was modified for 21,500-lb. gross weight and electric trim tabs and Learstar controls were installed.

EAST COAST AVIATION, Bedford Airport, Lexington, Mass., had in the hangar for work Walter Martin's Page Airways Bonanza, an Air National Guard C-97, Clyde Hudnall's FAA DC-3, Ed Drinan's S. D. Warren Co. Beech. . . . Doc Pollock's Waltham Industries Twin Navion, Dick Fournier's Brown Paper Aero Commander and Stu Jones' Miniature Precision Bearing Co. Beech.

AIRESEARCH AVIATION SERVICE, Los Angeles International Airport, has three Grumman Gulfstreams for auxiliary gas turbine modification to incorporate a 200-amp generator — Norman Buzby's Wall Street Journal Grumman, Norman Mitchell's Minneapolis Star Gulfstream and Earl Sjobeck's 3M Grumman. . . . Bob Grant and Fred Hurd brought in Humble Oil's Super Convair for interior refurbishing, air system revision, super-soundproofing and fuel system rework. . . . New window paneling, new cabinets and other work went into Howard Baird's

CORPORATE JETSTAR PILOTS are visiting Lockheed Aircraft at Marietta, Georgia, more frequently as first deliveries this summer approach. Here's Jack Hunter, superintendent of flight operations for the Canadian Department of Transport, checking progress on the DOT's new Jetstar.

Kenaire Corp. Convair 240. . . . George Dippel brought in Timken Roller Bearing's 4-place MS-760 twin jet for soundproofing, additional landing lights and other work. . . . J. V. Swanson's Sears-Roebuck Convair 340 was repainted. . . . Hughes Aircraft's newly-acquired Convair 240 was painted. . . . Woody Bartlett's Gibbons & Reed Aero Commander was in for interior and radio work and painting. . . . Chuck Hanner's National Supply Martin 404 received radio work.

CHOOSE YOUR 4-PLACE

(Continued from page 27)

the Piper Cherokee. Its 1,005-lb. useful load is 45.8% of its gross weight of 2,200 lbs. This compares with 43.8% for the Piper Comanche 250 and 43.6% for the Cessna 175, and so on down the list.

But you get the idea. It all boils down to "hangar-flying" the problem of choosing an airplane and there isn't any single yardstick with which to arrive at the best airplane for everybody. Yet, many people making their first choice wind up with an unhappy or unsatisfactory selection. The best way to avoid this is to locate a reputable aircraft dealer who is not only capable of recognizing your individual requirements but has the integrity to satisfy those requirements with the right airplane, whether it is a new or used one, a leased one or one rented by the hour. Sooner or later, you and your dealer will come up with all the answers to solve your needs and you'll be convinced that the airplane you then select is the best of all, bar none.

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BEVO HOWARD

(Continued from page 37)

the line submerged in the gasoline regardless of the position of the airplane. Howard has learned to empty his pockets before an exhibition. "I've strewn the runway at Charleston with fountain pens and watches," he quips. He operated out of Charleston, S. C., in the early days of his carer.

Howard's plane is famous in its own right. The Buecher Jungmeister was made by the Germans in 1936. Under the Versailles Treaty, Germany could not build an airplane weighing more than 1,000 pounds. This model weighs 976 pounds and was designed ostensibly as a sportsplane. The Jungmeister actually was used to train fighter pilots for the German Luftwaffe before World War II.

The Jungmeister Howard owns is the only one in North America. It was brought to the United States aboard the dirigible Hindenburg in 1936 by the late Alex Papana, famous Rumanian aerobatic pilot. Five years later, Col. Papana sold the ship to Mike Burphy, a renowned flier with whom Howard had flown in many shows. After Col. Papana and Murphy had flown the ship in national and international competition, Howard bought it in 1946.

Professionals regard the Jungmeister as the most maneuverable airplane ever built. Its tapered wings that spread only 21 feet 7 inches give added snap to maneuvers. It is light in the air and responds to controls like a trained seal.

More people are attending air shows than ever before. But the shows, for the most part, are dominated by the military. Howard sees it this way, "Air show flying is so specialized, it is exclusive. It takes desire, ability and patience to develop a precision flier. The cost of the right kind of equipment is another thing and air show flying is not the highest paid form of entertainment." Howard is regarded as the best paid in the business.

In 27 years of aerobatic flying, Howard has known every name precision flier in the nation — men like Hal Krier of Garden City, Kan.; Rod Jocelyn of Langhorne, Pa.; Woody Edmundson, Washington National Airport; Marion Cole of Monroe, La.; Tony Leveir and Sammy Mason, Lockheed Aircraft test pilots; Mike Murphy, manager of the aviation department of Ohio Oil Co.; Joe Mackey, president of Mackey Airlines; Bob Hoover, manager of customer relations for North American Aviation; the late Al Williams.

Howard often is asked how much longer he will keep up his aerial gymnastics. "I will fly in air shows up to the point where they interfere with my business or I begin to worry. My biggest worry now is being able to schedule exhibitions."

Howard is president of Hawthorne Aviation, Charleston, S. C. His civilian flight schools, under contract with the Air Force and Army, have trained more than 30,000 students.

PROJECT AIR-SHARE

(Continued from page 30)

freedom and enjoyment in the air.

"I want to assure you that I will do my best to see that the FAA fulfills its obligations to you and to the public as prescribed by the President, the Congress, and the courts. In doing this, I urge you to join me in a cooperative effort of sharing ideas. I will welcome, and every FAA employee should welcome, your suggestions as to how we can better serve the particular phase of aviation in which you are interested. I would like to urge that you give thought to the ways in which you feel we can cooperate. New methods of serving our common cause can and will be discovered. Give us your ideas, not just your gripes. In anticipation of a generous response to this request, it will not be possible to acknowledge personally every letter; however, I assure you that every suggestion and idea will receive thoughtful review and careful consideration.

"During the coming weeks I will announce some specific methods through which I hope to see more effective participation by the aviation community in the activities of the FAA. As these develop, I trust that I may count on your vigorous and productive assistance. In turn, I shall do my best to insure that all interested persons are kept fully informed of our plans and our problems.

"To paraphrase President Kennedy's statement, I am hopeful that you will be alert to ways in which you can serve aviation, rather than simply the way aviation can serve you. With such an approach, the understanding and cooperation essential to continuing aviation progress will be assured.

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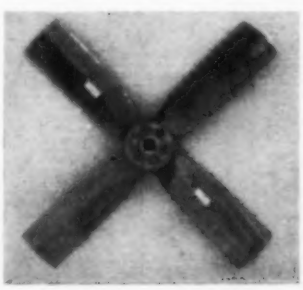

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